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Radio Control **CAR ACTION**



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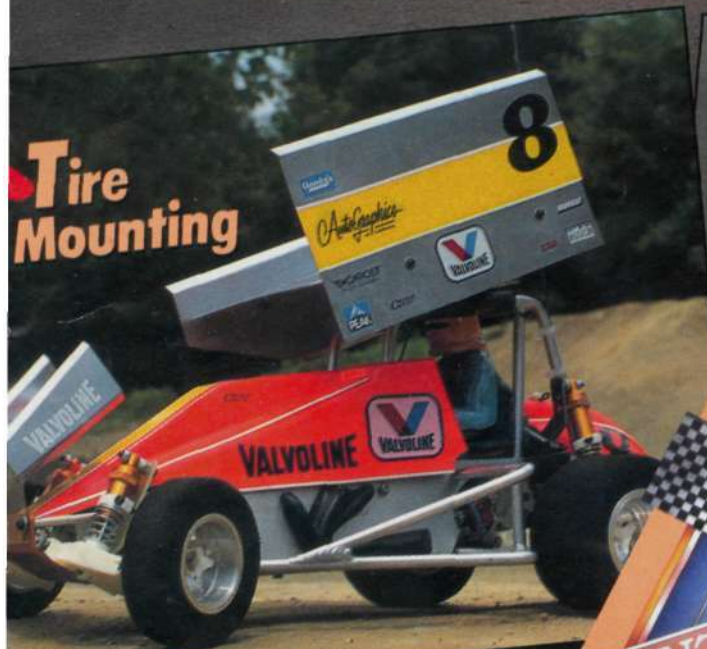
THE WORLD'S BIGGEST R/C CAR MAGAZINE

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**Pacesetter 1/4-Scale
Dragster**



**Tire
Mounting**



**Kyosho's
Hot New Cosmo**

**Blackfoot/Beetle
Shoot-Out!**

**SPRINT
SPECIAL
CAR**



Build This Sprint Car



Contents



FEATURES

- 14** R/C ELECTRONICS:
ARISTO-CRAFT HI
TECH CHAL-
LENGER 250
by Charlie Kenney.
- 18** MOUNTING TIRES
by Rich Hemstreet.
- 20** QUARTER-
POUNDERS
by the RCCA Staff.
- 24** FULL-SCALE
SPRINT CAR
by Steve Pond.
- 28** SERVO SAVERS
by Rich Hemstreet.
- 31** Ni-Cd BASICS
- 34** POLE POSITION
by Rich Hemstreet.
- 40** MIDWEST 1/8-SPRINTS
by Rich Hemstreet.

- 42** MRC/TAMIYA
BEETLE/
BLACK-FOOT
SHOOT-OUT
by the RCCA Staff.
- 45** TROUBLE-
SHOOTING
by Fred Murphy.
- 50** STICKY GROUP
INTERNATIONAL
RACE CASE
by T.J. Lyn.
- 54** THE CHARGER
by Roy Moody.
- 61** INSIDE TRACK
by Mike Lee.
- 74** 1/10 SPRINT
CAR CON-
VERSIONS
by RCCA Staff.
- 128** THE SCREAMIN'
SHOEBOX
by Eric Goldschrafe.

TRACK REPORTS

- 26** THE TRAXXAS
CAT
by Dick Brinton.
- 52** PACESETTER
DRAGSTER
by RCCA Staff.
- 57** MRP GP-10
by T.J. Lyn.
- 67** UMP COYOTE
by Rich Uravitch.
- 70** KYOSHO COSMO
by Rich Uravitch.
- 80** KYOSHO PLAZMA
by Rich Hemstreet.

DEPARTMENTS

- 7** EDITORIAL
by Louis V. DeFrancesco, Jr.
- 10** LETTERS

Cover:

Greeting you on the cover, this issue is: Top, Pacesetter's incredible 1/4-scale dragster. Below Left, An RC10 sprint car conversion. Below Right, WCM 1/4-scale sprint car. Bottom, Scratch-built Moody Charger sprint car. All photos by Steve Pond, except the Charger by Louis V. DeFrancesco, Jr.

- 12** INSIDE SCOOP
by Chris Chianelli.
- 36** PIT TIPS
by Jim Newman.
- 110** WHAT'S NEW
- 132** TRACK
DIRECTORY
- 143** AD INDEX

Radio Control CAR ACTION

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EDITORIAL

by LOUIS V. DeFRANCESCO JR.

HAVE WE GOT AN ISSUE FOR YOU—Sprint Car City! It's no secret that all scales of radio control sprint cars are gaining in popularity, gas and electric, so it was only natural to dedicate a substantial part of this issue to these dynamic race cars. The biggest area of sprint car growth seems to be the $\frac{1}{10}$ -electric cars, specifically converting your R/C 10 into a dirt-track animal.



We have featured three of these conversion kits (turn to the centerspread) for you to check out. I must say, we had a blast the day we went to the local track to test these new machines. What was most intriguing was how scale-like the cars performed: high-speed four-wheel drifts, rooster tails, end-over-end crashes (courtesy of Chris "crash squirrelinelli" Chianelli). It is obvious why they're experiencing such growth. For you die-hard modelers, we even have a construction article on a $\frac{1}{10}$ sprinter you can build, the Charger! And for you Octane animals, we featured some of the latest $\frac{1}{4}$ -scale gas offerings so don't forget to check out the article called "Quarter Pounders."

"Pit Tips" has been so popular we decided to increase it by two pages—why not have more of a good thing? Keep sending us your modeling and racing tips and score a free subscription if we publish it.

Many of you commented on the airbrush illustrations we have started to use throughout the mag. These are done by Garrett Miller, one of the hottest airbrush illustrators in the country, and he's been painting wild show bikes, hot rods and vans since the Sixties. You'll be seeing more of his work in future issues.

As usual, we packed the magazine with great modeling tips, super-hot reviews on the latest cars, wild graphics and photography and much more. Keep those letters and comments flying in—and one last comment for all you rock and rollers: Always use full throttle!!!!

Letters



More on R.O.A.R.

I have read the letters about this R.O.A.R. business for two months now, and I was going to let Mr. Lubrano's comments go as lack of information, even though he is close to the truth, but when he was verbally chastised by a major manufacturer who also employs the current R.O.A.R. president, I had to speak up.

This is a primary example of someone smelling a rat in the R.O.A.R. organization and instantly having his legs cut off before he can provoke racers into doing too much thinking. Over the past nine years, R.O.A.R. has been a thorn in my side, not because I don't abide by the rules, or because they are thinking about the sport of R/C racing, but because those who control the rules, control the sport; those who control the sport, control a multi-million-dollar industry. If certain rules can be enforced, made either through legislation or imagination that make it harder for the competition, such rules will be passed. If such legislation can be justified under the cloak of "good for the sport," so much the better.

I can give many examples of injustices done to myself, other racers, and manufacturers over the years. Currently, a big problem that's being "snoozed over" by R.O.A.R. is the battery problem. The main reason all the big factory teams win all the 1/12-scale electric races is because they have the best batteries. Although they all are very good drivers and have excellent cars, they shouldn't win all the races! Some of the little guys in the pack are also good drivers with excellent cars, but they don't have a chance against the teams that can run off-road motors in their 1/12-scale cars, and go a full 8 minutes! The batteries in 1/10-scale off-road racing are a lot less important, since the races are only 4 or 5 minutes in duration. The obvious answer is to shorten the length of 1/12 races, so that the batteries

are less important, and the driving and building skills are more important. Why hasn't R.O.A.R. done something about this? Because the hierarchy at R.O.A.R. are the same folks in charge of the big factory teams that have the exceptional batteries! In my opinion, they don't want other racers to become more competitive because they feel that winning races sells more cars, motors, accessories, etc.

It is also my opinion that R.O.A.R. is peppered with corrupt individuals who use this basically fine organization for their own benefit. To the energetic, sport-minded officers involved, such as Barbara Morris, Bob Rule, Eric Gudger, and Cliff Fisher, to name a few, keep up the good work—we'll soon have our "weeding" finished. Perhaps Mr. Lubrano knows something the R.O.A.R. members don't.

"BIG" JIM GREENMEYER
President, Checkpoint Racing Inc.

Calling All Girls

First of all, let me say that you have a fantastic magazine! My boyfriend introduced me to the world of R/C cars, and I'm fascinated by them. I read your "Track Report" in the August '87 issue about the Parma Mini Mustang. All of a sudden, I felt like a kid at Christmastime. But I've run into an obstacle: where do I get one? My local hobby shop is small and doesn't stock very many R/C cars. Also, could you please tell me which radio system (I prefer pistol-grip) would best fit a small hand like mine?

By the way, why aren't there more letters from women in your magazine? Is it because you folks don't get any? If this letter gets printed, I'd like to say one thing to the women out there who read it: let's hear from you! I know there are other women racers out there. I'm sure that other women would enjoy hearing the views, ideas, and questions of fellow

racers. Let's get on the ball and make ourselves known as much as the men. We have the same abilities to race as the guys, so let's show it!

SHERRY SENFF
Astoria, OR

Sherry, it's great to hear from a woman racer. The ladies out there very seldomly write to us, why? And you're right, Sherry, they are out there; shame on you ladies for staying under cover. The PB Mini Mustang is fairly new, so if you can't get it locally, try calling one of the mail order houses in our magazine, most have a toll-free number. We lined up all the pistol-grip transmitters we could find at the office and had the women here try them all. The ladies with petite hands like yours found that the Hobby Shack KO EX-2 and KO Ex-5 fit very well. As far as I know, the EX-9 has the same grip as the EX-5. Both these radios very reliable, quality products. Once again, to you women out there, Sherry and I say: let's hear from you, let's get more women into racing! Let's all meet at the track—we guys would really like to see if you gals have got what it takes. CC

Gas The Grass

Dear Radio Control Car Action dudes, I've got to inform you about how great your magazine is. There is no R/C industry without your magazine. The review of the Hobby Lobby 1/8-scale Gas Hunter by Chris Chianelli compelled me to buy one. Without his review, the great car I have wouldn't exist, and my lawn wouldn't be torn up. I've read a lot of the letters in your "Letters" column and think it's a great idea. Thanks, and keep up the good work.

TIM CAGLAREW
Duxbury, MA

Tim, coming up next month we'll have the latest Hobby Lobby offering, the 1/8-scale Tornado with a Picco .21. Although the

We welcome your comments, and suggestions. Letters should be addressed to "Letters," **Radio Control Car Action**, 632 Danbury Rd., Wilton, CT 06897. Letters may be edited for clarity and length. We regret that due to the tremendous amount of letters we receive we cannot respond to every one.

Tornado is a different car, it shares many of the same features as the Hunter. We'll continue to feature 1/8-scale gas cars, and maybe even a shoot-out—and tell your dad I'm sorry about the lawn. CC

Shaft Or Chain?

I have a problem. I've got to ask you what's better: shaft-drive or chain-drive. I would also like to see a track report on the Coyote two-wheel-drive and four-wheel-drive.

ROBERT BALL
Kalamazoo, MI

Robert, my experts have their own opinions, but experience shows that a shaft-drive will not stretch like a chain-drive. As for your Coyote review, see the June '87 issue for the four-wheel-drive, and this issue for the two-wheel-drive. FM

The Fastback's Back

I just received my August issue. Your magazine is without a doubt the finest on the market. I have a question about the "Mounting Lexan Bodies" article: where did you get the Mustang Fastback body from?

LARRY DeLONG
Eugene, OR

Larry, the '66 Fastback is available in 1/10- and 1/12-scale from BoLink. CC

Balance 'Em Both

First off, let me commend you on your fine magazine. I got my first R/C car two years ago, but a year later I wasn't interested in R/C anymore. Then I happened to pick up an issue of *Radio Control Car Action*, immediately I became interested again.

I've been wondering about tire balancing. You guys had a tire balancing report in the April '87 issue, but it was about

sponge tires. Does that mean I don't need to balance rubber tires? By the way, I have a Tamiya Frog and tried out the modifications suggested in "Project Frog." They worked great! My compliments to Fred Murphy.

ALVIN CARAGAY
Pikesville, MD

Alvin, all tires and wheels perform best when they're balanced. We'll continue to bring you more information on this subject. Oh yes, Fred says he's glad he could be of help. CC

Airplane-Only!

I've got a question for you folks. I have a Subaru Brat with a Futaba Conquest radio system. My frequency is 72.750 MHz. Is this a legal frequency for cars, or is it an airplane-only frequency?

WILLIAM MUNCY
Oak Ridge, TN

William, 72.750 MHz is most definitely an airplane frequency! Do not use it for your car, it's against the law! CC

Gas Hopping?

Can you put a gas engine in a Grass-hopper or Hornet? Would it be too expensive or time-consuming?

CHRIS HORTON
Orlando, FL

You really can't put a gas engine in an electric car. The great power developed by a gas engine can't be carried by a drive train designed for an electric motor. Furthermore, there may be components on an electric car that, not being fuel-proof, would be attacked by the nitromethane in glow fuel. CC

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The Inside Scoop

by CHRIS CHIANELLI

THE R/C car industry is in a fast-pace state of advancement with new products being offered at a head-spinning rate. The number of choices from entry level to all-out competition equipment is ever-increasing. In light of this phenomenon, I'll make the manufacturers nervous and you R/C squirrels who are hungry for info happy by bringing you a special report on security leaks and "late-in" items in the new "Inside Scoop."



WHAT DO Lewis and Clark and Tamiya have in common? A pioneering philosophy. Not too long ago, Tamiya gave us the 1/12-scale 959 Porsche rally car, and the Monster Beetle. Now we have the Lunch Box, a monster van. With giant wheels, an all-new box-type resin chassis, and sealed gear box, the Lunch Box looks like it's designed to boldly go where no truck has gone before. Watch for an upcoming review and, oh yes, the return of the Hot Shot, the Hot Shot II.

* * *

YOU DRAG dogs will be interested to know that the tire and wheel guys at Advance Engineering will be coming out with four new true-to-scale, complete funny cars, two in 1/10- and two in 1/12-scale. Details are still very sketchy, but I can say that each scale has a choice of either GM or Ford body.

UNCLE ERNIE, of Trinity, has just released information on his new line of 64-pitch gears. This means less power loss due to friction as a result of the closer tooth spacing. The spur gears are graphite-filled for superior wear- and chip-resistance, especially helpful for off-road use.

* * *

ATENTION followers of "The Scoop," a legend (who, for the time being, will remain anonymous) in the full-scale aftermarket hot-rod parts (particularly manifolds) is introducing a line of 1/4-scale cars and accessories, some with the awesome Connelly V-8 engine and nitrous-oxide system. With a heavyweight like this getting into the market, it can only mean that there's serious trouble brewin'! Wait till you find out who it is!

* * *



ROBBY, the folks that brought us the Jeep CJ-7, the Mercedes 190E, and the unforgettable Ferrari Testarossa, now bring us two more unique and scale cars, the Lancia Delta S4, and the Peugeot 205 Turbo 16 of the European rally genre. These cars feature four-wheel-independent suspension, pre-wired electronics, scale details, and optional working headlights.

* * *

MIKE WHITE, the pundit of Pacesetter Products, has disclosed some top secret information: they are working on more new 1/4-scale cars, including some unprecedented refinements on their Formula I car. This Formula I road rocket will supposedly be the best handling 1/4-scale R/C car in the world! It should be available early this fall.



GREAT PLANES has informed me that an all-new 1/8-scale gas car, the Burns, will replace the Vanning. What's this? Are they holding out on me? My spy in the Far East, code-named "High Lingafoon," has sent me some photos taken with his hidden camera. The two buggies appear to be 1/12- and 1/20-scale, the latter being supplied with radio. And last, but not least, a front-wheel-drive front motor 1/12-scale Honda CR-X road rally car. I sure hope they see fit to import this one! If you agree, drop them a line and let them know how you feel.

* * *

THE RADIO CONTROL Car Action lizards have been burning the midnight oil to complete our jumbo buyer's guide, which will feature hundreds of the latest and greatest items in the R/C car industry. Look for it mid October at your favorite newsstand or hobby shop.



- 50/50 or 70/30 throw
- Spring or ratchet throttle control
- Servo reverse switches, both channels
- Charger connector for optional Ni-Cds
- LED RF output indicator
- LED battery indicator
- LED "low-power" flashing indicator
- Fuel-resistant plastic case
- Neck strap connector
- Excellent transmission range

RECEIVER—HP-2RN 75D

- Small, lightweight, rugged, and high-performance AM 2-channel receiver operating in the 75 MHz band
- Narrow-band receiver design using ceramic filter for maximum resistance of adjacent channel interference
- Power requirement: 6.0V DC; 4 AA alkaline batteries shared with servos
- External removable crystal
- Polarized connectors to insure proper connection
- 39-inch-long receiver antenna

Aristo-Craft/HiTec CHALLENGER 250

by CHARLIE KENNEY

from Polk's Model Craft Hobbies

THIS MONTH I have the opportunity to review another Aristo Craft Hi Tech radio, namely, the Challenger 250 from Polk's Model Craft Hobbies*. The first thing that strikes you about the Challenger 250 transmitter is its diminutive size measuring 6.25x5.75x2.13 inches. It weighs only 1 pound, 3 ounces with eight alkaline pencils. A self-contained carrying handle is molded into the transmitter case at the upper left. The particular set I received operated on channel 78—75.750 MHz, color code purple-gray. The system consists of the Challenger Transmitter Model HP-2TS 750, Receiver HP-2RN 75D, two HS-402 servos plus receiver dry-cell battery case with switch, servo grommets, and mounting hardware plus four different

spare servo arms for each servo. The set also allows you to change stick length by providing spare sticks which are a quarter of an inch longer than the ones provided. In addition, you can change the throttle servo from a spring-loaded neutral to a detented control with the part provided. I know my own preference is spring-loaded throttle for cars and detented for boats simply because I don't change a throttle position on a boat as often as a car. This is often continually, when driving in competition. Let's take a look at the Challenger 250 system features.

TRANSMITTER—HP-2TS 75D

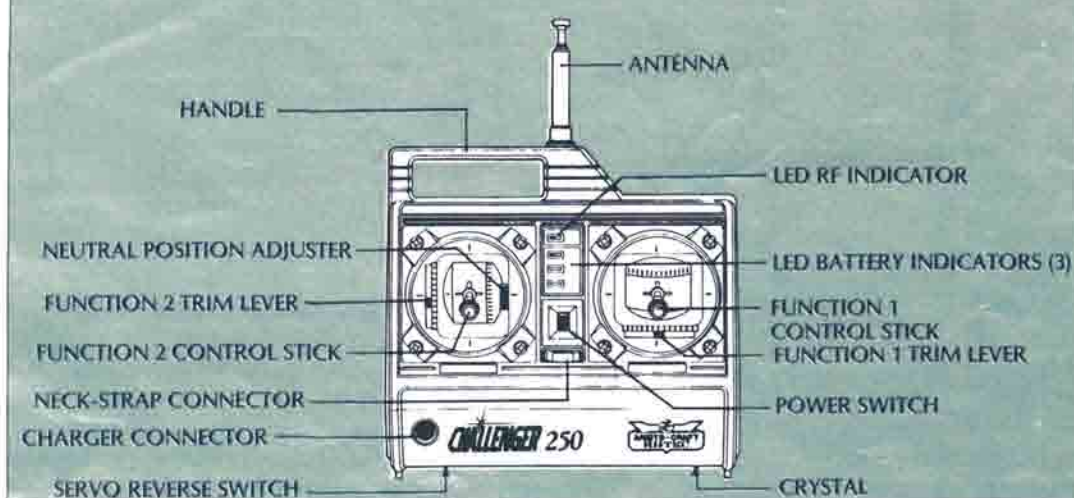
- Multi-purpose control stick assembly—2 channel
- Two selectable control stick lengths
- Adjustable neutral position (external)

SERVO—HS-402

- Small lightweight heavy-duty servo
- Four different spare servo arms provided
- Servo is made from high-impact-resistant plastic
- Servo is dust and waterproof
- 10-inch connecting cable and polarized connector are standard
- Indirect drive for gear train drive protection

Let's talk about the transmitter. At a weight of only 1 pound, 3 ounces, it's like you're holding a feather compared with some of the single-stick transmitters I fly. As the transmitter is always the heart of the radio system, let's start there. At the upper left there is a small molded-plastic handle which is part of the transmitter

TRANSMITTER LAYOUT



brown plastic case. On top is a 30-inch 6-element telescoping antenna which radiates the transmitter signal. Moving to the left stick we have the throttle control (Channel 2). It only moves back and forth; the trim control on the left is electronic. The control on the right of the stick is a two-position control; leaving it in the Up position the neutral is centered and stick throw is centered about neutral, with a throw of plus-or-minus 50°. Moving the control switch downward changes the stick neutral by 20° so that the forward control is 70% of the throttle throw and the rearward throw is 30°. In the center panel of the transmitter we have a display consisting of four LEDs. With fresh batteries, the top display "on air" lights green and the high battery light (top of three) is red. As the transmitter

photos by ACE PHOTOGRAPHERS



Transmitter bottom view: servo-reversing switches to left, removable 75 MHz crystal to right.

batteries lose their capacity, the lights will move from high to normal to low. When the low light comes on, it's time to change batteries or recharge if you use Ni-Cds. Below the battery status display we have the power On/Off switch; up is on, down is off. Below the On/Off switch is a neck

strap loop. To the right of the battery status display is the second stick (Channel 1). It is used for steering with a right and left movement about neutral. Rounding out the stick assembly is a trim control at the bezel bottom, also electronic as was the throttle trim. The remaining front

TRANSMITTER—HP-2TS-75D

Operating System: Two single-axis sticks with servo reverse
No. Channels: 2
Modulation: AM
Frequency: 75.750 MHz
Power Requirement: 9.6V Ni-Cd, 12V with 8 alkaline batteries
Current Drain: 90 mA at 12V DC
Dimensions (body): 6.25x5.75x2.13 inches
Weight: 1 pound, 3 ounces (with 8 alkaline batteries)
Antenna: 30 inches long using 6-element telescoping whip

RECEIVER—HP-2RN 75D

Receiving Frequency: 75.750 MHz
No. Channels: 2
Modulation: AM

IF: 455 KHz

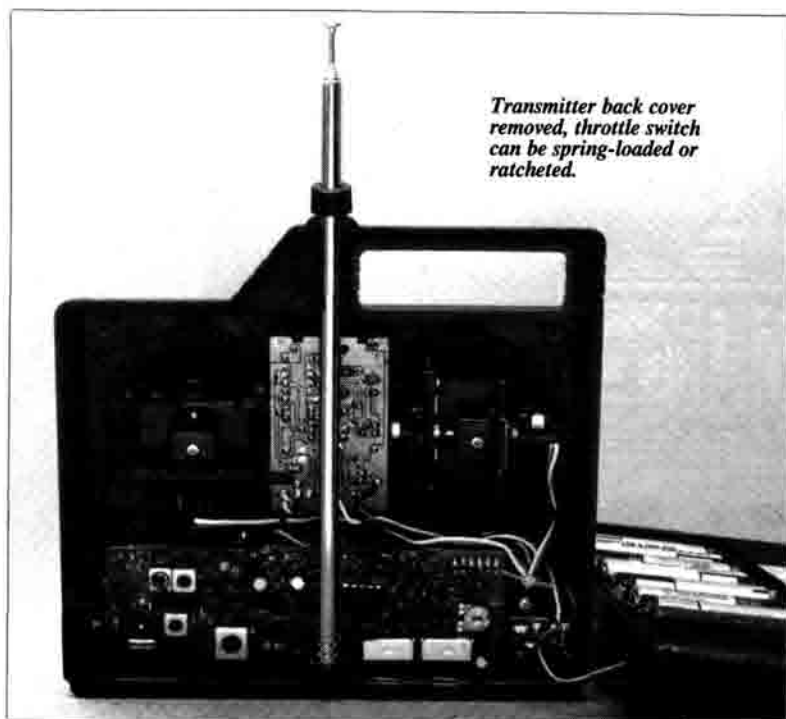
Power Requirements: 6V at 15 mA

Size: 2.37x1.5x0.75 inches

Weight: 1.5 ounces

SERVO HS-402

Control System: + pulse control (1.520us neutral)
Operating Angle: Rotary system, one-side 40°
Power Requirement: 6.0V (shared with receiver)
Current Drain: 6.0V, 6 mA (at idle)
Output Torque: 42 inch/ounces
Operating Speed: 0.16 sec/40°
IC: M5166OL or NE544
Dimensions: 2x0.8x1.9 inches
Weight: 1.6 ounces



Transmitter back cover removed, throttle switch can be spring-loaded or ratcheted.

AA Ni-Cd batteries which could charge both transmitter and receiver batteries.

Another series of features of the Challenger 250 that I thought were special were the longer spare-stick knobs. The myriad of accessories they provided and the "spring defeat" which allows you to convert the throttle very easily from spring action to ratchet action by simply removing two screws. This is a really novel feature and gives great versatility to the radio.



HP-2RN75D two-channel AM receiver with covers removed. Very compact.

panel detail on the transmitter consists of a charging jack on the lower left front of the transmitter (if you use Ni-Cds). If you now turn the transmitter over to view the bottom, you'll see the two-channel servo-reverse switches. On the left is throttle



Vehicle battery pack and switch harness, receiver, and two HS-402 servos weigh only 9 ounces.

with normal switch position left and reverse to the right. To the right of the throttle switch is steering, which operates in the same fashion.

There are no controls on the transmitter back but there is a removable cover which exposes the transmitter battery compartment. Opening the compartment reveals space for 8 pencil (AA) batteries, Ni-Cds, or alkaline cells. If you wish to use Ni-Cds in the vehicle packs, you must buy a suitable charger and rig a way to charge them. For example, if you're not very handy with electronics, GE sells a whole family of chargers including size

I enjoyed this review. I'm going to use the Challenger 250 in an upcoming car review.

Charlie Kenney, c/o Radio Control Car Action, 632 Danbury Rd., Wilton, CT 06897.

**The following is the address of the company mentioned in this article:*

Polk's Model Craft Hobbies, 346 Bergen Ave., Jersey City, NJ 07304. ■

Tech Tips

Mounting Tires

by RICH HEMSTREET

A novel approach to a common procedure.

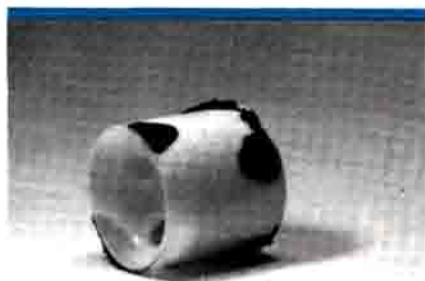
FIVE YEARS AGO I could have put a new set of tires on my Associated* 12E and run the car for a full season without changing tires. Those days are gone. I have now replaced tires after one 5-minute run on concrete and after one day of racing my 4-cell BoLink* Bandito on carpet.

The expensive way of replacing your tires is to keep purchasing pre-mounted tires. The hard way to replace them is by pulling the old tire off the rim and installing new rubber donuts. The most difficult part of this method is cleaning the rubber off the rim. After pulling a tire off, you find that patches of rubber are still glued to the rim. These patches are torn away from the tire as it is ripped off the rim.

There is a process you can use when mounting your tires that really makes clean-up easier. Before installing the new donut, put a single layer of tape on the clean rim. Be sure to wrap the tape all the way around the rim. Press the tape down carefully so that it's securely attached to the rim. You then place the new donut over the taped rim and cyanoacrylate the tire to the tape.



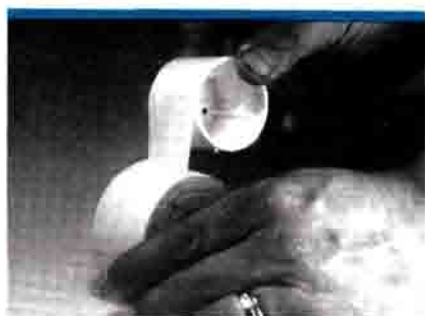
Tires, tape, wheels, and glue are all that are needed.



Chunks of rubber left on the wheel must be cleaned off.



Apply tape to clean rim.



Well-aligned and wrinkle-free tape application is a must.

When the time comes to replace your tires, simply cut through the tire and the tape with a hobby knife and peel the tape off the rim. The tire and tape will come off in a single unit, and the only clean up you might have to do is to clean a little adhesive off the rim. You're then ready

for more tape and another tire.

There are two problems you run into when searching for the right tape. The first is poor adhesion of the tire to the tape. Glue doesn't stick to vinyl or vinyl-coated tapes. It also doesn't stick well to strapping tape.

The second problem is the tape not sticking securely to the rim. You can glue tires to masking tape, but the tire and tape will eventually spin free of the rim.

What tape handles both problems? You need a cloth-type tape for the tire to stick, plus a strong adhesive backing to hold it to the rim. I've found that Johnson & Johnson's AthleteCare Sports Tape does the job. Tapes used for taping baseball bat handles or bicycle handlebars also work.

While this procedure works well for foam tires, it also works on semi-pneumatic tires. Just be sure you use Flex-Zap when gluing these tires to the tape.

Tape saves time and money while changing worn-out tires!

*The following are the addresses of the companies mentioned in this article:

Associated Electrics, 1928 East Edinger, Santa Ana, CA 92705.

BoLink R/C Cars, Inc., 420 Hosea Rd., Dept. 487, Lawrenceville, GA 30245. ■



Simply glue the tire to the taped rim.



Quarter

by the RADIO CONTROL CAR ACTION STAFF



Pacesetter Hi-Tech set up for the no-wing class.

photos by CORY SAVAGE

WATCHING 1/4-scale sprint cars freight-train their way around a turn or do an end-over-end in virtual slow-motion (in comparison to smaller-scale crashes) is so authentic I sometimes expect to see an 18-inch (1/4-scale, of course) pit crew run up to the machine when it pulls off the course.

Quarter-scale racing in all its forms has been gaining popularity steadily, but the winged, or unwinged, oval-track sprinters seem to be

-Pounders

Experience the height of realism in detail and handling with one of these 1/4-scale sprinters.



particularly at home in 1/4-scale.

With their chainsaw engines blaring, their wheels and tuned pipes hanging in the breeze, and their comet-like dust trails, 1/4-scale sprinters emulate that full-scale seat-of-the-pants excitement found only in oval track racing.

Here, we're going to give you a quick look at three exciting 1/4-scale sprinters: the modified Raco* Jackrabbit or Roadrunner (street version), featured in the June '87 issue of *Radio Control Car Action*, the Pacesetter* Hi-Tech,



Super-scale WCM car with front and rear wing.



featured in the Winter '87 issue, and the ultra-scale WCM* Sprinter, which will be covered in an in-depth track report in the next issue of *Radio Control Car Action*.

The 38-inch Hi-Tech from Pacesetter features a 2-cubic-inch, 2-horsepower McCulloch, with centrifugal clutch and solid-state ignition. Except for the coil-over shocks, the suspension on the Hi-Tech is very similar to those found on full-scale sprinters. The Hi-Tech is normally supplied with chain-drive and McCulloch, or can be custom-ordered with a quick-change rear, for those wishing to use a model airplane or Weed-Wip engine in the in-line mode.

The Raco offering is a modified Jackrabbit, which can be extreme! I've seen these machines clad in full-race regalia, complete with tuned pipes, staggered tires, and, of course, front and top wings. For an all-out road version, check out the Raco Roadrunner in the June '87 issue of *Radio Control Car Action*, where Phil Sroka outlines some performance tips for those of you who already own a Jackrabbit.

The perfectionists down in big ol' Texas, WCM Incorporated*, have an incredible exact-scale sprinter which boasts of the most-winning full-scale Gambler tube chassis and Jacobs ladder for fantastic rear end stability. This machine has got to be seen to be believed, so we'll be bringing you a full-blown report next month by the venerable Doctor Bruni, don't miss it!

All evidence points to 1/4-scale hysteria, and why not? With its unprecedented parallel to full-scale excitement and



WCM car with bare bones exposed. This machine is scale right down to the tube chassis configuration.

realism, it's certainly no surprise. Just don't be shocked if the next time you see 1/4-scale racers negotiating a turn through the dust clouds you notice the plastic driver turning his head to check out the guy behind him.

*The following are the addresses of the companies mentioned in this article:

Raco Modelcraft Inc., 1400 C East Saint Andrews Pl., Santa Ana, CA 92705.

Pacesetter Products, Inc., 930 W. Hyde Park Blvd., Inglewood, CA 90302.

WCM Inc., Rt. 2, Box 207A, Buffalo, TX 75831.



S

TART with a Gambler Competition sprint car chassis, add a 410-cubic-inch 730-horsepower Donovan engine, finely kneaded by Ron Shaver, throw in Hilborn fuel-injection, KSE steering system, quick-change Winters rear end, Gambler in-board disk brakes, dry sump oil system, transmission; sprinkle on some Goodyear tires, Streaker wheels; then stir in some pure methanol! Add a Coors Light sponsorship, and there you have it: the No. 18 Coors Light Silver Bullet sprint car piloted by the World of Outlaws 1982 rookie of the year, Brad Doty.

Just to give you an idea of the explosiveness of the outlaw sprint car breed, consider for a moment that an outlaw tips the scales at roughly 1,300 pounds and harnesses a 730-plus horsepower engine. This translates to a horsepower-to-weight ratio of better than 1.78:1 (1 horsepower for every 1.78 pounds). If that doesn't put a wrinkle in your forehead, a fully-loaded F-15E fighter



photos by STEVE POND

S FULL-SCALE **SPRINT CAR** The motor sport spectacular!

by STEVE POND

jet comes in only slightly higher with a horsepower-to-weight ratio of 1:1!

The Coors/Gambler sprint car team also has seven-time World of Outlaws

(Continued on page 48)



Track Report

by DICK BRINTON

THE FOLKS at Traxxas* are importing a dandy two-wheel-drive, 1/10-scale, off-road car called the Cat. This car is priced for people who are getting into R/C cars, but don't let the low price deceive you. This car has



The Cat from Traxxas

many features that you generally find only on higher-priced cars.

For instance, when was the last time you saw an entry-level car with a front end designed so there is very little toe-in change and no camber change as the front suspension moves up and down? And it has a butter-smooth differential, right out of the box.

Was everything perfect? Of course not.

Like most entry-level cars, it could use more suspension travel. On serious whoop-de-do's, the car gets out of shape when the suspension

bottoms. The problem is in the spring damper units themselves. (Let's call them shocks.) They work okay, but there is less travel built into them than is designed into the suspension itself. To get the best from the Cat, a set of aftermarket shocks that match the suspension travel are better. It's a lot easier to add different shocks than to try to increase travel which is limited by design.

In off-road cars, if I were given the option of higher quality shocks or more suspension travel, I'd opt for the longer suspension travel any day. But let's start at the beginning.

A well-equipped entry-level 1/10 electric.



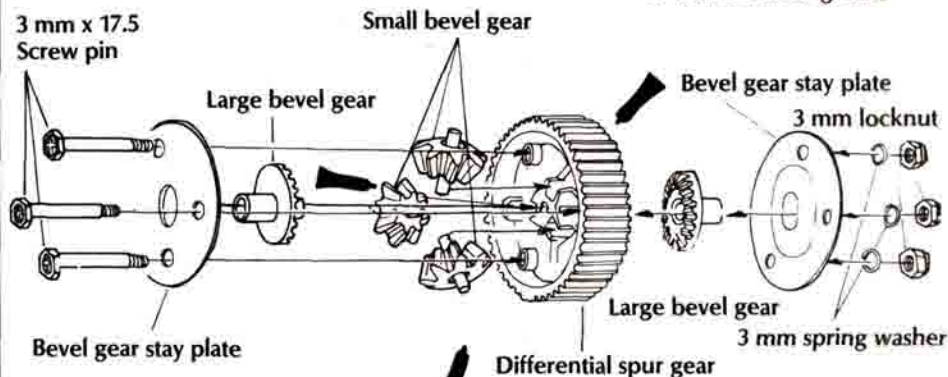
I received both kits for this test. Both kits? Yes, you can get the Cat either completely assembled including radio or in a simple kit without the radio.

If you purchase the completely assembled kit you'll be running as soon as you charge a 7.2-volt battery, load eight AA batteries in the transmitter (batteries are not included), and slap on the decals. That's it. It's even got battery eliminator circuitry (BEC), so you don't even need receiver batteries.

If you omit the decals (don't, they add a lot of pizzazz to the car), you can be running in less than five minutes for the same price as some car kits sans radio. Not bad for a completed and adjusted car including radio.

If you decide to build the kit, you'll be equally pleased

Assembly of Differential Spur Gear



Bevel-gear stay plates help guard against entire differential spreading under stress, preventing gear stripping. Sketch courtesy of Traxxas.

with the ease of construction and lower cost. The thorough instruction booklet includes an illustrated parts list so the builder knows which part is being used where.

There's no need for me to go through the steps, but I'll note some design features.

(Continued on page 48)

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Tech Tips

Servo Savers

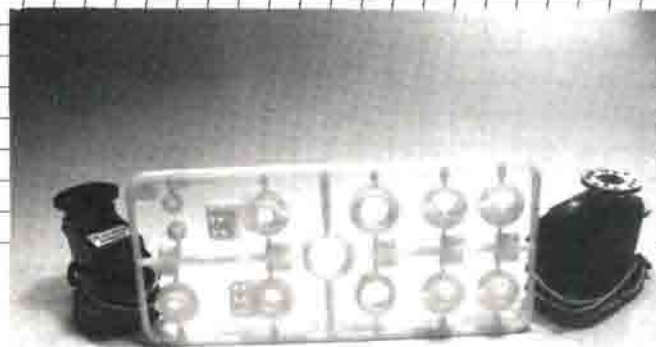
RADIO-CONTROL car racing wouldn't be possible without extremely durable on-board radio systems. The steering servo has the toughest job in the system. While the receiver just coordinates signals, the steering servo has to change the car's direction with brute force. And while the other servo only moves a lightweight wiper arm across a rheostat, the steering servo has to withstand being battered when a front tire hits the wall.

The only protection for your servo is a servo saver. The most common servo savers are attached directly to the servo. Most of these provide excellent steering response in addition to protection.

When using a servo saver, mount the servo close enough to the front suspension so that the tie rods can be easily connected to the servo saver. It's best to have the servo's output shaft centered between the steering blocks. The tie rods should be identical in length for the best possible steering geometry. It's critical to have the servo saver centered when the car is going straight. If it's not centered, your car will have less steering in one direction than the other—an unbalanced steering response is difficult to overcome with driving skill.

Servo savers have "springs" built into them to absorb shocks which the servo may be subjected to. These springs may be anything from a coiled wire spring to a

by RICH
HEMSTREET



Kimbrough servo saver protects the servo in crashes.

Protect that expensive servo gear train.

nylon C-ring. Every time the pressure exceeds the strength of the spring, the servo saver stops steering and starts protecting the servo. The moment your car hits a wall, the front tires are violently pushed to the side. At that instant, the spring on the servo saver has to protect the servo. A split second later, full steering control returns.

When I first got into 1/12-scale racing, I was told I wouldn't need a servo saver. I heard that you got more responsive steering when you didn't use a servo saver. I shouldn't have listened. The first time my car hit the wall the teeth on the servo gears were destroyed. I had to learn how to replace servo gears to get the car running again.

Many kits contain direct-connect servo savers which build to fit your servo. They usually have interchangeable adapters to accommodate many different brands of servos. I've only found one of these that worked well. Some of them didn't stay together once they were assembled, others broke apart while racing; and one wouldn't return the servo saver to its

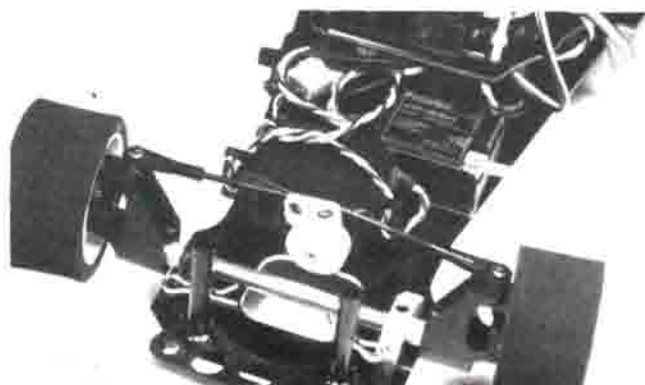
starting point after a crash. After a wreck the car would not go straight unless I turned the steering hard to one side, but then I didn't have any steering left to actually turn the car in that direction.

The only build-it-yourself servo saver I found that worked was the nifty MRC-Tamiya* Directly Connected Servo Saver (Part No. 5204). This unit can be used on most popular servos. This kit has enough parts to make two separate servo savers, one for off-road cars and one for on-road racers. Use the stronger spring for an off-road vehicle, the weaker spring for on-road car.

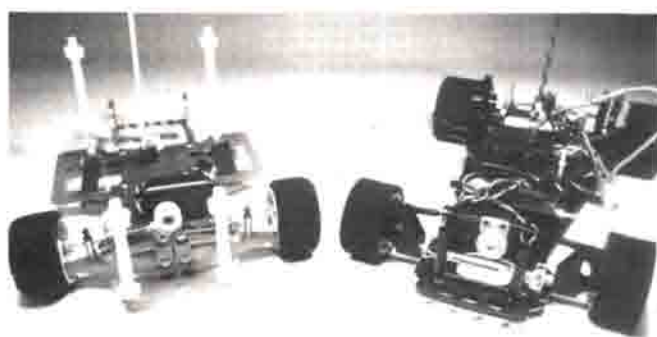
Kimbrough Products* manufactures sturdy servo savers for 1/12-scale cars. These are each designed for a specific servo, so you have to be sure to get the right one. They also make a larger servo saver that has interchangeable adapters to fit many different brands of servos. This unit is used for both 1/10-scale off-road and 1/8-scale gas-powered road racers.

To make your car's steering more re-

(Continued on page 83)



MRC/Tamiya servo saver can be built for several servos.



Car on right has saver that's set up correctly; saver on left car is off-center, while the tires are straight.

Ni-Cd Basics

Tech Tips

by T.J. LYN

The heart and soul of your R/C car.



Left: Tekin Peak Detection Charger gives full charge and maximum safety. Right: Sanyo matched sub-C cells from Trinity designed for fast charging.



THE HEART of your R/C car is the batteries, which produce the electrical current to power the motor. These batteries are known as Ni-Cds, or nickel cadmium, sub-C cells. Nickel and cadmium are the elements which compose the internal core of the battery, and sub-C refers to the size of the cell itself. The sub-C cell is the standard size battery in use in today's R/C cars. Radio-controlled cars use either four, six, or seven sub-C cells, providing about 1.2 volts of power to the motor with each cell. They are rated at 1.2 ampere/hours (Ah) which supplies 1.2 amps per hour, or 2.4 amps per half hour, and so on. If your car uses a 6-cell pack, then it's using six sub-C cells, 1.2 Ah, with a nominal voltage of 7.2 volts.

The cells used in your car are specially designed for fast charging, and I'd recommend making sure they're constructed for this application. They should be constructed in such a way as to not produce excessive gas when charged. This is done by fitting them with a vent to relieve pressure that may build up during the typical 15- to 20-minute quick charge. Any other type of Ni-Cd construction can be very dangerous, so make sure your Ni-Cds are vented to handle the fast charging which they'll be subjected to.

Most Ni-Cd packs come ready to use

and are fitted with suitable connectors that can be charged and plugged into a car instantly. These are okay, but I suspect that once the racing bug really bites you, the urge to custom build your own Ni-Cd pack will overcome you. When it does, a lot of folks will give you advice, but here are a few points to remember.

There's really only one way to match batteries and, believe me, you won't have the time or the money to realistically accomplish it. What you have to do is to charge every cell, then discharge them, plotting the power curve of each cell. The cells can then be matched in packs with all cells having equal performance. Once this is done, your pack will be matched and will stay that way as long as it's not overcharged or shorted out. By the time the cells would change enough to no longer be matched, the useful life of the coils is virtually over, if you're racing seriously. They will still function, but will put out less power than when they were new.

The companies which supply matched cells go through 5,000 to 7,000 cells and only 33% of them can be used as matched packs. The rest of the cells are sold through non-hobby related industries. And if you don't believe that matched packs make a difference, the next time

you're at any major racing function see how many of the winning drivers have matched packs in their cars. Most likely they'll have packs like the Trinity* matched Sanyo. Buy Ni-Cd cells. You'll save yourself a lot of trouble and really improve your performance.

If you assemble a pack yourself, use a super glue to hold the cells in place and make sure all the cells have a solder tab. The solder tab will make soldering a lot safer and easier than trying to solder onto the body of the cell. Make sure the batteries are wired in series, not parallel. Solder them negative to positive. Do not solder all the negative posts together and all of the positive posts together. Once



A 30-ohm resistor with Tamiya connector for economical discharging.

you're sure the series wiring is complete, place the entire pack in shrink wrap and, with a hot air gun, secure the pack into its final configuration.

Now, a few words about charging your Ni-Cds. There are many schools of thought on charging and many devices on the market to provide your Ni-Cds with a charge, but let me outline a few guidelines for you. First, always discharge your packs completely before charging. This can be done very easily by connecting a 30-ohm resistor across the leads of the battery and letting it sit for as long as possible. This will erase any memory in the cells and ensure the best possible charge every time. Second, use a 3- to 5-ampere charging current for the amount of time needed to store 1 ampere hour in the cells. This should be about 15 to 20 minutes since the Ni-Cd is only capable of producing 1 ampere of usable energy,



This 7.2-volt battery pack, ready for shrink covering, shows two 3-cell stick configuration.

even though it's rated at 1.2 Ah. If you charge it more than 1 ampere hour, you run a risk of damaging or even destroying the pack.

As for the types of chargers to use, if you follow the racing circuit at all you'll notice that most winners are using peak-detection chargers. Peak detection is proving to be the best method of preventing overcharging, since this unit lets you know when the pack has reached its most complete charge. Remember that

heat is your Ni-Cd's greatest enemy, and overcharging generates a lot of heat, so don't do it.

The ideal situation is to run a Ni-Cd pack only when racing, but we all know that this isn't always possible, so give your packs as much rest between runs as you can. Let them cool down and discharge completely for optimum performance. It's also very important to be careful when handling the batteries so that the plus and minus leads don't touch and short out the cells.

Remember, no matter how fast your motor is, you can only run as fast and as long as your batteries allow. If you don't take care of your batteries, you won't get maximum performance from your motor.

**The following is the address of the company mentioned in this article:*

Trinity, 1901 E. Linden Ave. No. 20, Linden, NJ 07036.

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The Pole Position



Tenth-scale stock cars on super speedways are where our sport is headed.

R/C Short Track Racing

by RICH HEMSTREET



Finishing a 1/10-scale stock car to the exact specs of a particular full-scale car is commonplace.

SHORT TRACK RACING. We've looked at sprint car racing elsewhere in this issue, so let's see if we can adopt some ideas from full-scale short track racing to make our own racing more realistic, and fun.

Qualifying. Many short oval tracks have single-car qualifying, each car runs a warm-up lap and then is "on the clock" for one or two separate laps. In most cases, the timing is done electronically, but stop watches can be used. Only the best single lap counts. Tracks use qualifying for both main event placement and heat race starting positions. There's tremendous pressure on a driver as he goes out to try and run two or three fast, clean laps. Having driven both full-scale stock cars and radio-control stock cars during qualifying, I've found there's more tension driving the R/C versions. I think it's because you're standing alone beside the track, rather than sitting strapped inside a car. Either way, a good qualifying run gives you a natural high.

Two-Up Starting. Virtually all full-scale races start two cars abreast. The only notable exception is the very dangerous Indy 500, where a three-abreast starting format is used. We should adopt two-abreast starting whenever possible to help eliminate some of our first turn crashes. Each pair of cars should be placed at least 3 to 5 feet apart. Our club tried this on some oval track races and it really helped the cars get through the first turn.

Short Heats, Long Mains. For some reason, most racers of electric cars figure they have to run the maximum amount of time their batteries will allow. If they race 1/12-scale cars, they always run 8 minutes. But full-scale oval track racers run short heat races, followed by longer main events. Why don't we try running shorter heat races? If 1/10-scale sprint cars can run 20 laps in 4 minutes, why don't we run 10-lap heats, followed by a 15- or 20-lap main event? This would speed up the racing program and have more drivers fighting for the lead in the heats. If you use shorter heats and single-lap qualifying, you should make it illegal to switch motors during the events. Drivers should use their main event motor for both qualifying and heats. To enforce this rule, a colored sticker could be placed on each



Left: Indy cars are most at home on high-speed ovals. Above: Outlaw dirt stock cars don't look very stock. Right: BoLink's '55 Chevy would make an excellent street stock racer.



car's motor before it qualifies.

Inverted Starts. On most short tracks, the fastest cars in each heat start in the rear of the field. This gives the slower cars more chance to steal a victory in the heats, and helps to prevent follow-the-leader parades. In the main events, the positions are switched, the fastest cars are put up front, and the rest of the field starts behind them. In a ten-car R/C main, it would probably be a good idea to invert the four fastest cars. The fifth through tenth cars would start behind this group. That still rewards the fastest qualifiers, but it also makes for a more competitive main.

Last Chance Race. This is similar to the bump-up system, where the winner of a lower main can move up to the next higher main. This gives the driver with a bad qualifying run a chance to still make the main. Winners of the last chance race would start at the rear of the main event. In a ten-car race, I recommend reserving two spots for winners of separate last-chance races. That means the eight fastest single-lap qualifiers would be in the main event, and the last two spots would be filled through last-chance races.

Fast-Car Dash. After qualifying is complete, the four fastest cars run a five-lap dash for bragging rights. The cars start in inverted order. These races are usually made up of four of the best drivers in a club. It's an honor just to earn a spot in the fast-car dash.

Australian Pursuit. In this race, the ten fastest qualifiers start off in single file. The fastest qualifier starts at the rear of the field. The object of the race is to pass the car in front of you without being passed by the driver behind you. As soon as any driver is passed, he must drop out of the race. These races are usually 8 to 10 laps. On the last lap, the first car across the finish line is the winner. If the fastest qualifier passes everybody before the 8 to 10 laps are over, he's the automatic winner and doesn't have to complete the race. No car may be passed before it crosses the starting line. In other words, the race doesn't start on the green flag. Instead, it starts as each individual car crosses the starting line.

Oval Racing. Why should we be so concerned about short-track oval racing? I've heard it said, "Everybody's into road racing or off-road racing." But thousands of fans attend oval tracks every weekend to see full-scale racing because, to them, road racing is not identifiable. They are used to seeing late-model stock cars, sprint cars, modifieds, and street stocks. If your club runs more oval races, you'll have a better chance of attracting new racers. Many people that go to full-scale races would love to be able to afford to race. When introduced to our affordable sport, they will be eager to get involved. You may even be able to run an exhibition race at one of the full-scale tracks during intermission. That would certainly give your club excellent exposure.

SERA. Five tracks from four states
(Continued on page 83)

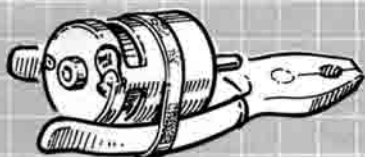
Below left: Full-size sprint cars run on ovals every weekend.



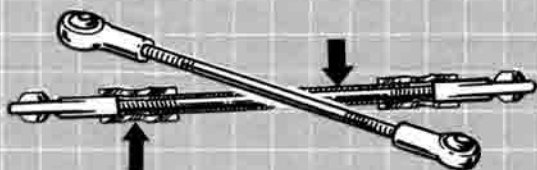
Left: NASCAR Racers waiting to qualify. Above: Oval tracks attract thousands of spectators.

Pit Tips

by JIM NEWMAN



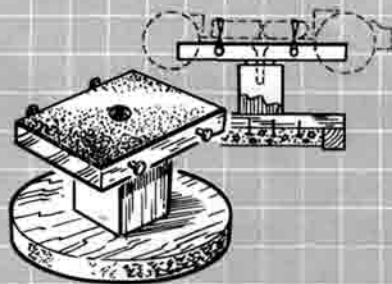
Nesting your motors in between the plastic grips of pliers is a simple way of stabilizing the motors while working on them.
Zac Wheatcroft, Claremont, California



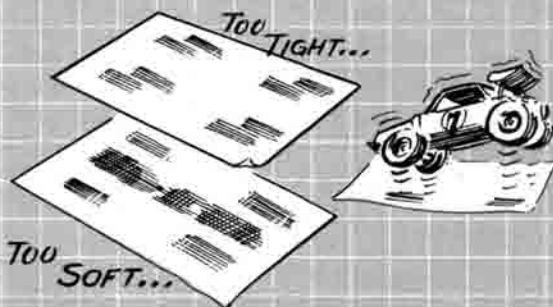
To protect your steering rod (track rod) from damage from rocks, etc., slip a piece of aluminum tube over them, leaving a slight gap at each end to allow adjustment. The gap can then be covered with short pieces of clear plastic fuel line. Our contributor improves the appearance of his rods by polishing the tubes.
Steve Marshall, Brigham City, Utah



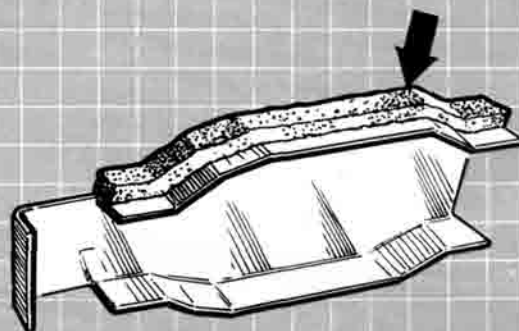
You don't like those unsightly body clips? Why not get rid of them like this racer did. He makes use of washers and socket-head cap screws to attach his bodywork to the nylon tube stand-offs. Removal is simple with a ball-ended Allen wrench. There are also some neat chrome-plated mushroom head Allen screws, too. Check your electronics and hardware stores.
Gary Vice, Florence, Kentucky



It's much simpler to work on your car if it's supported off its wheels. Here's a simple turntable to which your car can be rubber banded. If you wish, the base can be built up to provide a recess into which some short nails can be driven. The nails key into ordinary mortar (cement) which provides more weight to the base. Note the rubber pad on top of the turntable.
Robert Brigham, Nepean, Ontario, Canada

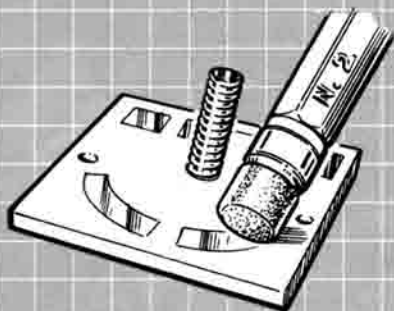


Here's a quick way of checking the setting of your suspension units. Place a sheet of carbon paper on the floor, carbon side up. From a height of 14 inches drop the car on it in a level attitude. If the units are set too soft, they'll bottom out and leave an impression of the chassis. If they're set too hard, the car will bounce and leave multiple impressions.
Kurt Ringhofer, Alsip, Illinois



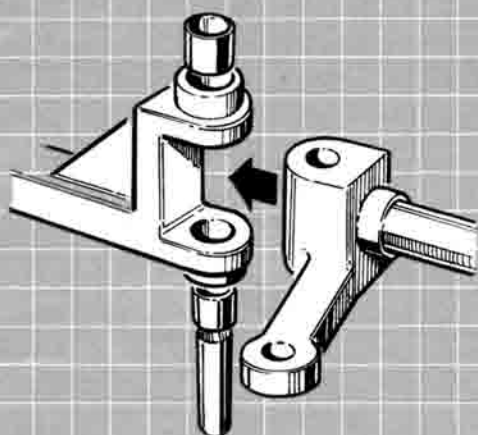
Thick, self-adhesive foam weather stripping stuck around the edge of the tub will keep the usual garbage out of the car by sealing off the gap around the bottom. See K-Mart and building supply stores.
Jim Beckner, Collinsville, Virginia

Radio Control Car Action will give a free one-year subscription (or one-year renewal if you already subscribe) for each idea used in "Pit Tips." Send rough sketch to Jim Newman, c/o **Radio Control Car Action**, 632 Danbury Rd., Wilton, CT 06897. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO, AND NOTE YOU SUBMIT. Because of the number of ideas we receive, we cannot acknowledge each one, nor can we return unused material.



To clean the track of your speed controller, simply make use of a pencil eraser. You'll find that it will bring it up bright and shiny.

Eric Baier, Oshkosh, Wisconsin



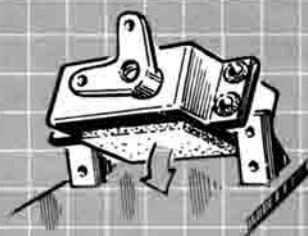
Worn kingpins? Use a drill press (preferably), and drill out the top and bottom holes to $\frac{1}{32}$ -inch diameter. Press in pieces of $\frac{1}{8}$ -inch i.d. brass tubing and add a drop of cyanoacrylate for good measure. Cut two new kingpins from $\frac{1}{8}$ -inch diameter stainless steel welding rod, reassemble the front end, check the alignment, and you're ready to race. Like as not, you'll find that most of your steering slop has vanished.

Tim Atkins, Charleston, West Virginia



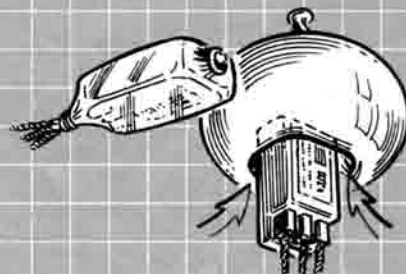
Convert your worn, off-road tires to pavement tires. Buy a box of wide rubber bands and slip a few of them onto the tires as shown. This contributor says the traction is awesome! He also finds that different bands offer different amounts of grip and make for some interesting experimentation.

Greg Bell, Brighton, Ontario, Canada



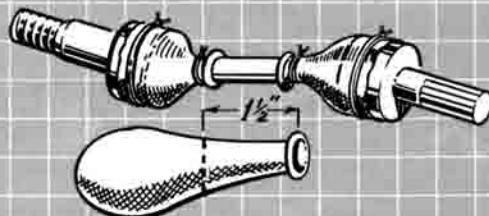
Check your steering servo and you might find it floats excessively on its rubber bushings. Excessive float gives imprecise steering. The answer is to build up layers of double-sided adhesive tape so that the servo case sticks to the chassis platform. Clean the case with rubbing alcohol before attaching the tape.

Julian Harvey, Garnerville, New York



To prevent water from entering his receiver and speed controller, this car owner cut up balloons and encased the units, tying tightly around the wires with rubber bands. Another way of enveloping your receiver is to partly inflate the balloon then press the receiver into it as shown, so that the unit is in the center of the balloon donut, after which air is carefully released.

David Botarelli, Evergreen, Colorado



Those balloons again! This time cut them as shown, slip them over the half-shafts and universal joints of your Pegasus or Icarus after packing them with grease. Use wire ties to secure them in place. The axles last longer and do not attract dirt. Balloons are \$3.00 compared to the \$8.00 for the "official" rubber bag set. Wires are Radio Shack No. 278-1632.

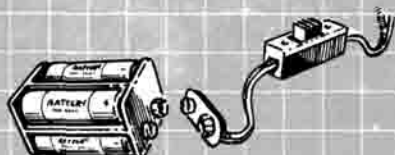
John Renn, Fort Devens, Massachusetts

Pit Tips



To speed up maintenance and pit work, this owner has changed all the screws on his car to the Allen-head variety. Using a Q-Tip he color codes all the screws—one color for each size. He also color codes each size of Allen wrench to match, and has eliminated all the fumbling for the correct size wrench.

Dana George, Anacortes, Washington



Each time this contributor removed the battery from his Frog, the receiver battery holder fell out, putting a strain on the wires until they eventually broke. His cure was to obtain a Radio Shack battery holder with the 9-volt-style snap-on connector. To his battery leads he attached a 9-volt snap connector. Now he can unsnap and remove the battery case for safe keeping.

Anthony Nomellini, Elmwood Park, Illinois



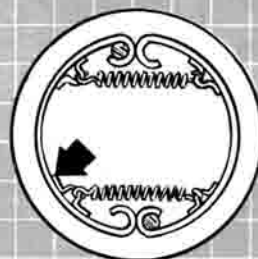
A most reliable way of ensuring your battery is charged to peak is to observe the voltage with a digital voltmeter. When the voltage falls by $\frac{1}{10}$ (0.1) volts, the Ni-Cd pack can be considered peaked. In the example shown, when the voltage drops from 10.56 to 10.46 volts, you have a peaked battery. Note how voltmeter is wired across the battery by way of the plug. Of course, you could also wire an extra plug across the battery and plug it into that.

Ed Fickett, Hanover Park, Illinois



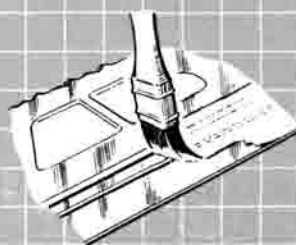
Are those knock-around knobby tires losing their knobs? Thoroughly clean up the tires and roughen the knobs a little with sandpaper. Heat each knob a bit with the tip of a hot glue gun, then apply a knob of hot glue. Do this around the whole tire.

Jeff Crapo, Milk River, Alberta, Canada



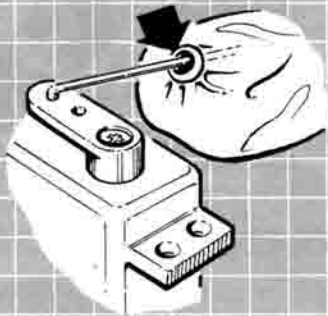
Chronic clutch-spring breakage was the only complaint this owner had of his Wildcat Buggy. As he remarks, "An hour's work with a soldering torch and a couple of springs permanently solved the problem." See how he soldered little music wire loops on each clutch shoe? He also cut two nails to $\frac{1}{4}$ -inch long and drove them into the back plate to serve as pivot pins and shoe retainers. The sketch shows all.

Ed Koporc, Cortland, Ohio



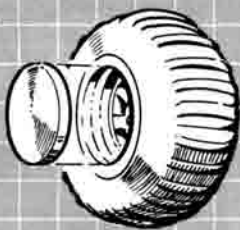
"A dynamite striping job," is how our contributor describes his efforts. Before painting, he applies automotive striping tape to the inside of the body shell. Then, he paints up to, or over, the tape on the inside of the shell. The tape comes in a variety of colors and the taped and painted examples of plastic he sent along were excellent, comprising single-color, two-tone, and three-tone paint jobs.

Vic Otero, Ogden, Utah



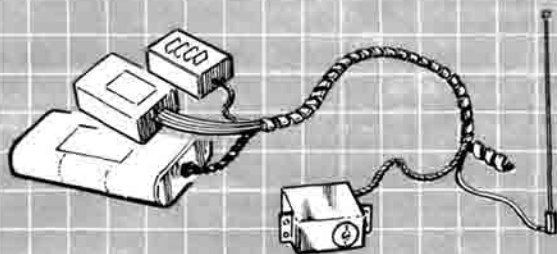
This car owner had a problem with the rubber bag over the speed controller of his Hornet. Apparently, the bag dragged on the pushrod, so he cured it by putting a shoe lace grommet in the opening—indicated by the arrow.

Ron James, Eudora, Kansas



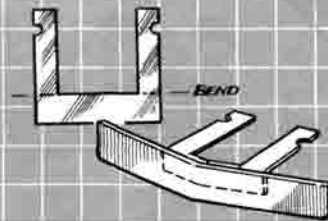
This simple device will keep your rims from loading up with mud. It's a plastic cap from a milk jug! Pushed into the wheel rim well, it effectively keeps out the mud and can also be painted to resemble the rim locks and mud covers on full-scale oval racers.

Jim McKinley, Vero Beach, Florida



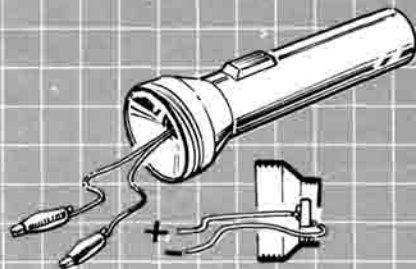
Plastic wire ties are semi-permanent and must be cut for removal. A better method is to use 1/4-inch spiral cable wrap, available from electrical supply stores. This spiral wrap can be re-used indefinitely and gives a neat appearance to your wiring.

Gary McCool, Mountain View, California



Here's a neat, flexible front spoiler—or air dam—to suit a Grasshopper or Hornet. Cut the mounting from 1/32-inch aluminum, then bend where shown. Cut spoiler blade from piece of old inner tube, then glue it to the aluminum, making sure the black side faces forward.

Sam Duran, San Diego, California



Some break-in their motors by hooking up to a pair of D cells. This modified flashlight provides a tidy system which has good contact between cells. Alligator clip-equipped wires are soldered to the (positive) light bulb socket and to the (negative) grounding ring on the rear of the reflector. The negative wire is brought out through a hole drilled in the side of the reflector.

Brad Schaffer, Fair Haven, New York

WHERE CREDIT IS DUE?

Many of the sketches and ideas we receive cannot be used because we cannot tell who they're from or because we do not receive a complete street address. Please be sure your name and complete address are **clearly printed** on each sketch, photo, and note you submit. Help us share your creative and time-saving ideas with your fellow modelers.



by Rick Hemstreet

Midwest 1/8-Scale

The dirt flew at this winged-sprinter event.



Pensive drivers watch their 1/8-scale sprinters dive into the first turn.

THE DIRT was flying as the winged sprinters ripped around the track. The Delta Super Speedway in Lansing, Michigan, was hosting the Midwest 1/8 Sprint Series. This was the third race of the season. Twenty-six 1/8-scale sprint cars showed up for the final tune-up before the Fifth Annual 1/8 Sprint Car Nationals.

The Midwest 1/8 Sprint Series is now in its fourth year. These front-engined cars are very scale. Approximately 80% of the field were Moody Americans, while the other 20% were scratch-built. The engines used were O.S., OPS, Picco, K&B, and one O.S. four-stroke. Most of the cars ran MRC (of England) Grand Prix tires with the Chevron pattern. A few cars used foam slicks on the front to reduce oversteer.

Nine local four-wheel drive, 1/8-scale gas-powered stock cars also showed up to run in a support class. Delta Speedway is only a year old and this was the first time the 1/8 Sprint Series had raced there. The track is a popular tri-oval shape with some banking. The racing surface is 12 to 15 feet wide. Delta Township built this

track in one of their parks. It's a very well maintained facility that should feature lots of great racing in years to come.

After separate practice sessions for sprints and stocks, the drivers underwent timed qualifying runs. One of the two Michigan sprint car drivers in the field was the first qualifier. Chuck Goff established the track record with his first lap at 10.82 seconds. Goff's lap ended up being only fifteenth fastest overall. Roy Moody of Illinois set the track record at 9.08 seconds. Moody's run came late in qualifying, on a very dry, slick track. If he had run earlier, he might have broken the 9-second barrier. The surface is hard-

packed and doesn't soak up much of the water that's sprayed on.

In stock car qualifying, Kevin Sherin was the fastest driver. Six of the 9 stock cars topped Moody's time. Four-wheel drive is hard to beat on a slick surface.

All of the racers ran three 15-lap heat races. The top performer from each of the five sprint car groupings advanced to the 35-lap main. Bob Rexrode of Ohio won all three of his heat races and established himself as a favorite in the main. Gary



Waldhelm, also of Ohio, ran the only four-stroke motor, and advanced to the main. The slick track seemed to be ideal for the four-stroke's range of power. Dick Crawford, Carl Mollitor, and Moody all advanced to the main.

Three 25-lap consies were run, with



Carl Mollitor, No. 6, attacks the first turn, followed by Gary, No. 2, and Marty, No. 0, Waldhelm.

Sprint Series



Harold Mitchum's No. 21 used front and rear wings.



Left: Tony Brickner powers through the first turn. Right: Marty Waldhelm is the driver of No. 0.



the first and second place cars each transferring to the 30-lap semifinals. The top two finishers in the semifinals were the last two cars to start the 35-lap main event. Marty Waldhelm and Rich Stuchel fought their way into the main through the consies and semifinals.

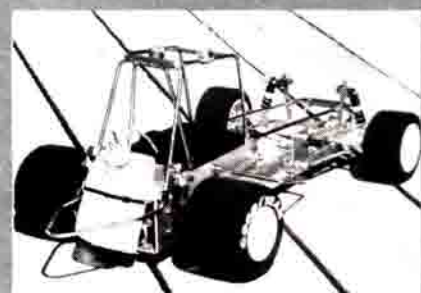
The seven-car main had some of the best racing of the day. The track was in the shade by this time, and the strong winds had died down. So the watering of the track before the main really improved the traction throughout the 35-lap event.

Moody looked strong in the early part of the main, but "brain-fade" dropped him from contention. Gary Waldhelm took the lead in his O.S.-powered four-stroke and seemed to have things under control. But, out of nowhere, Rexrode passed Waldhelm on the last lap and beat him to the checkered flag. Waldhelm took second, Marty Waldhelm, third.

Gene VanLancken won the 20-lap stock car main in his Picco-powered, four-wheel-drive Cobra. Russ Bishop held on for second, Chuck Bartholomew finished third. The 1/8 Sprint Nationals will be held at Rexrode's home track. After winning four out of four races in the tune-up, I'd pick Rexrode to win it all. ■



Gary Waldhelm's sprinter used a four-stroke engine.



Various angles of Ray Moody's sprint car, the top-qualifier. Picco powered.



**MRC/
Tamiya**

BEETLE/ BLACKFOOT SHOOT-OUT

by the RADIO CONTROL
CAR ACTION STAFF



Oil shocks and spiked tires were primarily responsible for Beetle's better handling.

**The two car crushers
from the Godzilla
factory duke it out!**

BOTH the Monster Beetle and Blackfoot by MRC/Tamiya* have been reviewed by the Radio Control Car Action staff (June and February issues respectively), but we thought it would be a neat idea to compare these two balloon-tire mud-mashers together.

While the Monster Beetle and Blackfoot use the same chassis design, the

Beetle includes several items that you should be aware of, to justify the higher price of the kit. The Beetle kit includes: oil-filled shocks, spiked-tread tires, gold-plated wheels, and a rear bumper. The Blackfoot kit: friction shocks, nonspiked tires, yellow wheels, and no rear bumper.

We put together a stock Beetle with only one change—we added a Polk's* Aristocraft, 2040R electronic speed control, which performed flawlessly throughout the test.

Construction was typical Tamiya quality with no problems encountered. The speed control was mounted on top of the servo cover plate for cooling and easy accessibility. We found that the Beetle was fine in 3-inch-tall grass and



The Beetle's shocks were particularly helpful in the airborne scenario.

was able to run at full power in this high-load environment without smoking the speed control, though we don't recommend doing this regularly. Next stop was to the dirt track for a little comparison with the Blackfoot.

Running the two side by side, we could see no appreciable difference in

speed, as you would expect. The Beetle did get through the corners faster, principally due to the rears hooking up better in the low-traction, loose dirt. In fact, the tires worked so well, we'd suggest that Beetle users get a set of Blackfoot rubber so they have a set of road tires to save wear on the nubs. Over the bumps, the shocks helped smooth out the ride, but the big tires absorb some of the benefit of the shocks as they compress and expand under loads.

In fun racing, the Monster Beetle has a big advantage with the large tires. The car was able to just run right over any car that got in front of it.

We're glad Tamiya produced the Monster Beetle. It's a little jazzier and might catch your eye if you don't happen to be into pick-ups.

**The following are the addresses of the companies mentioned in this article:*

MRC/Tamiya, Model Rectifier Corp., 2500 Woodbridge Ave., Edison, NJ 08817.

Polk's Model Craft Hobbies, 346 Bergen Ave., Jersey City, NJ 07304.



Stock Blackfoot except for a JG bumper.



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troubleshooting

by FRED MURPHY

The facts about motor brushes.

AS A RESULT of the legal $\frac{1}{10}$ -scale stock motors having exposed motor brushes, a lot of research and technology has been put into the development of high-performance motor brushes and springs. Just changing the size and shape of the motor brushes has an effect on performance as does the type of springs used. Now there is as much fiddling around with brushes and springs as with gear ratios. The following information I hope will clear up any confusion as to which brushes should be used under what conditions.

Many companies like Trinity are producing brushes out of new highly conductive materials that will last longer than "stock" brush material of original motors. These new materials will also insure the maximum performance from your motor.

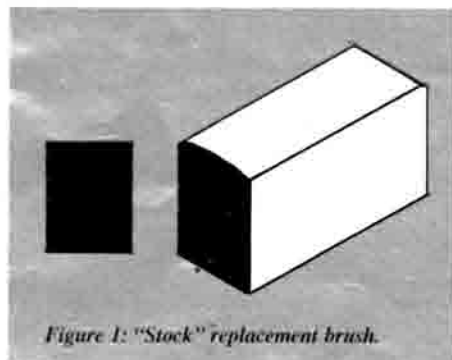


Figure 1: "Stock" replacement brush.

Figure 1 shows the Kyosho/Yokomo stock replacement brushes. This is the direct-replacement stock brush that fits all the open brush motors and is good for both stock or modified motors. This brush configuration will offer a good-running motor with maximum brush life.

Figure 2 is a "cut brush," a redesigned brush that will increase top-end speed in modified motors. These work very well in oval track motors for both the $\frac{1}{10}$ - and $\frac{1}{12}$ -scale cars.

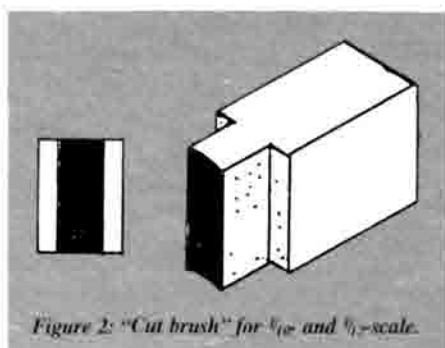


Figure 2: "Cut brush" for $\frac{1}{10}$ and $\frac{1}{12}$ -scale.

Figure 3 shows a "timed brush," unexcelled for use in stock motors (and they conform to R.O.A.R. rules). They're designed to increase the timing of the motor, which greatly increases rpm. In today's highly competitive stock-class racing these are a must! Don't be shy, the competition isn't. These brushes work so well it's like cheating.

The next example (Figure 4) is the "contour brush" that was developed for $\frac{1}{12}$ -scale modified racing. It produces the correct power curve for $\frac{1}{12}$ -scale cars while providing increased running time due to lower drag on the commutator. They're best if made of a soft brush compound to assure maximum horsepower.

In Figure 5 the "off-road" brush is shown. This brush is made especially for off-road racing. It increases the low-end punch without effecting the top-end per-

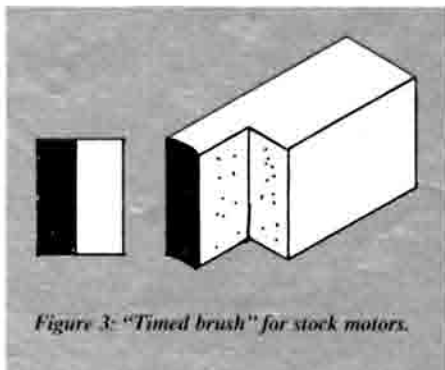


Figure 3: "Timed brush" for stock motors.

formance. They should be used only for the serious competitor with a car that is really hooked up to the track.

Due to the high heat produced by today's motors, brush-life has been greatly reduced. As the brushes heat up, they lose all their lubrication and start to score the commutator, thereby diminishing their electrical conducting properties. To insure

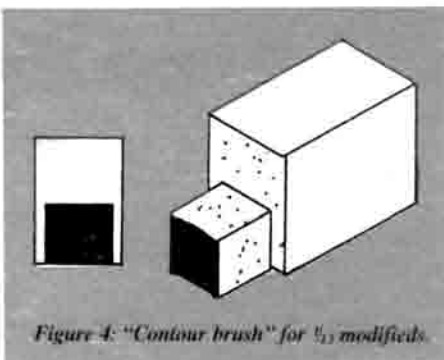


Figure 4: "Contour brush" for $\frac{1}{12}$ modified.

that your motor runs like new for as long as possible, I recommend changing $\frac{1}{10}$ -scale brushes every three runs and $\frac{1}{12}$ -scale every five to six runs—if you plan to win.

Motor springs also affect the way a

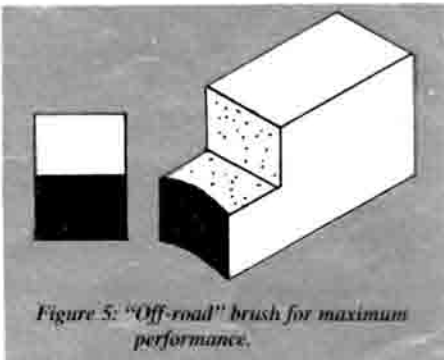


Figure 5: "Off-road" brush for maximum performance.

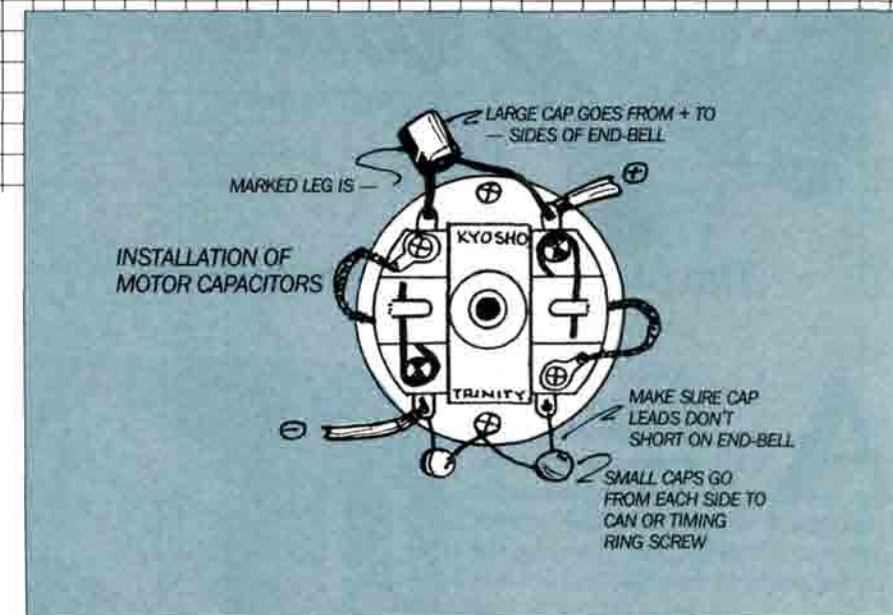
motor will run. Most commonly, springs are found in only two tensions, "lite" and heavy, that is, two tensions other than the stock spring tension that your motor is originally equipped with. Lite springs are lighter in tension than the stock springs.

They will increase rpm with a slight decrease in torque. They will also increase running time. Heavy springs, of course, have the opposite effect, by giving you their best performance on small, tight race tracks.

Now that I have covered some valuable information on motor brushes and spring tension, let's go one step further with some information on another way of insuring good motor performance. If you want your motor to perform its best, there are a few guidelines to follow. Most motors are already broken in and require no additional running to seat those all-important brushes. The timing has been set at the factory on precision instruments to insure the most effective running of the particular motor so don't reset it. Most problems are caused by tampering with motor timing. If you crank up the timing, it increases rpm but also increases motor heat, which can lead to a premature failure of both brushes and armature. Leave the experimenting to the experts. If you have the right motor and track conditions for your car, no playing around will be necessary.

Before you run your motor you should install capacitors to eliminate any motor-induced radio problems. A simple capacitor kit like the Trinity kit #79 will take care of these problems. This is essential when running in a race where the "auto count" lap-counting system is being used. Be sure that when you install the small caps you don't short the leads out on the aluminum end-bell.

The next step is to use the right gear on

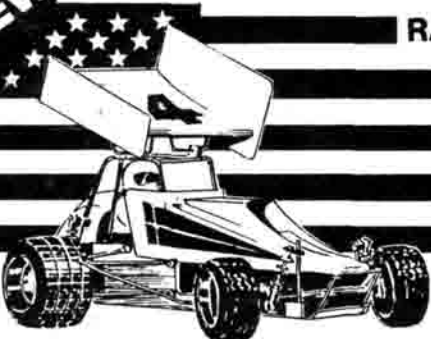


Motor capacitor installation will prevent uncalled-for radio interference.

your motor. All electric motors have a power band that the motor runs best in. When you gear the motor correctly you'll get the maximum battery life, good horsepower, and minimum heat. Gearing a motor to have "animal" top end is the easiest way to burn-out your motor. This makes a motor scream but kills the low-end torque, causing the car to bog down out of the turns. This causes excess heat and leads to shortened motor life. I recommend that you start with a 11- or 12-tooth pinion and a car like the RC 10 if you're using a modified motor; or, start with a 13- or 14-tooth pinion if a stock motor is being used. This is just a guide. Final gear ratio is determined by the track size, surface batteries, and your own driving style.

When you run the motor it's important to keep it as clean as possible. Running off-road gets lots of dirt inside the motor. If this dirt is not cleaned out it will wear out the brushes, bearings and commutator. The cleaner you keep your motor the longer it will run well. At this point I must warn you about using any "power sprays" or "horsepower additives" in the motor. They make the motor draw more amperage, use up the batteries and decrease motor brush-life. You might be able to get away with using them in a stock motor for a short while but never use them on a modified motor.

If you take care of your motor it will take care of you. Good luck and happy motoring!



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FULL-SCALE SPRINT

(Continued from page 24)

Champion Steve Kinser aboard and is currently on tour with the World of Outlaws circuit. The season begins on February 21 at Ascot Park in Gardena,

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California, and ends on October 31 at Manzanita Speedway in Phoenix, Arizona, with 64 other stops in between.

My opportunity to view these winged beasts came when the World of Outlaws tour made their stop at the Orange County Fairgrounds in Middletown, New York. After running some practice laps, the outlaws began their qualifying runs to determine the pecking order in the 30-lap main event.

One at a time, the outlaw sprint cars made their way onto the track. Starting with a lap to pick up speed, the driver got the green flag which signified that precious seconds were ticking away. On the edge of Armageddon, these brave warriors brought all 730 horses to life with the bark of a Howitzer cannon, hurling their winged chariots around the hard-packed dirt oval at speeds of up to 140 miles an hour, with seemingly reckless abandon (it actually requires a tremendous amount of skill).

After the qualifying times had been sorted, each racer found his place in the field for the big showdown. Once again, the green flag dropped and you could almost hear the pedals hit the floor.

As the field made the pilgrimage around the oval, the engines sang in unison, the tires tearing up chunks of the track. The battle for the lead was fierce with only inches separating the cars from each other as the drivers constantly shuffled the steering wheel, in an effort to keep the rear end from coming around and passing the front end through the corners. After 30 laps of this bump and grind, the checkered flag was waved.

Although Brad Doty of the Coors

Light Silver Bullet Team didn't finish at the head of the pack in Orange County, the veteran Steve Kinser driving the No. 11 Coors Silver Bullet took the checkered flag, giving the Coors team yet another victory.

One thing that can be said of outlaw sprint car racing is that it's one of the most amazing spectacles in the world of auto racing, but here you won't find the elitist attitude which is prevalent in many other forms of auto racing. If you're ever fortunate enough to get into the pits, you'll know precisely what I'm talking about.

After the race ended, I made my way over to the Coors Light trailer of Brad Doty, and although they weren't in the best of spirits, Les Kepler, the owner of Brad Doty's No. 18 outlaw sprinter, was more than happy to take the time to tell me about the car.

If you hear about the World of Outlaws tour making a stop near your hometown, take the time out to watch it in person. It's down-to-earth racing at its best. ■

TRAXXAS CAT

(Continued from page 27)

The rear suspension pivots on a ball-and-socket arrangement that allows bump-induced torque to be absorbed by both spring/damper units instead of just the spring/damper unit on one side. This results in a better bump-handling car. For this to work as designed, the ball and socket must be kept clean or it will bind up and cancel the good effect.

There are four oil-spring damper units

(Continued on page 64)

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Race Case

from Sticky Group
International

by T.J. LYN



Keepin' it all together and within reach.

TRANSPORTING your valuable R/C equipment to and from the race track is of great importance. One of the newest entries in this area is the Race Case from The Sticky Group International*.

This field box is a wood-based, vinyl-covered unit that will house your car, radio, charger, and equipment for the track. The case is very sturdy in construction with a heavy-duty top handle and locking front latch door. The tool and tire storage compartment has a Velcro latch located beneath where the car rests during transportation. The Velcro keeps this compartment securely closed, and you'll also find a piece of Velcro at the top of the compartment which keeps the lid open when necessary.

The compartment is very roomy, but the clearance under the radio and charger compartment forced the installation of an additional Velcro strip on the front of the radio tray on my box to hold the lip up for easy, hands-free access. The production version is now factory-equipped with this piece of Velcro. The radio tray is both deep and roomy enough for two radios. I always take two radios and two chargers along to the track, and the charger

compartment accommodates them both rather easily.

Storage space was great for my 1/10- and 1/12-scale cars, however, trucks, cars with a high roof wing, and my 1/10-scale Grand National car didn't fit. The Grand National car did fit once the body was removed and put in the case at a slightly upward angle to compensate for its length.

The front fold-down cover is a decent size, and makes a great mini work table. Initially, I propped anything I could find under the front of what has now become my portable work table to level the surface. I discovered that the locking hasp, when extended in the down position, was almost the perfect height for this task.

The Race Case is a fine and sturdy field box that'll provide good security with its key lock latches.

**The following companies are the distributors of the Race Case:*

Frank Tiano Enterprises, 2460 Southwest 85th Terrace, Davie, FL 33324.

House of Balsa, 20130 State Rd., Cerritos, CA 90701.

Robart, 310 North 5th Street, St. Charles, IL 60174.

DRAGSTER

by the RADIO CONTROL CAR ACTION STAFF

Break out the nitromethane 'cause the 1/4-scale Top Fuelers are here!



WHAT'S AS LONG as a Cadillac limousine, lighter than a Mustang GT, produces more horsepower than twelve Corvettes, and accelerates faster than an F-14 Tomcat on a steam catapult? A top-fuel dragster!

In the world of drag racing, the top-fueler, or "rail," holds the ace as fastest in the sport. These cars run on a mixture of fuel made of mostly nitromethane. When this fuel is pumped through the supercharged, fuel-injected big-block hemi engines, they produce more horsepower than any internal combustion engine their size (around 3,000 hp).

During the pre-race ritual, the top-fueler rolls through the "water hole." Then, the pedal hits the floor, burning off hundreds of miles' worth of rubber in just 300 feet. Although this may seem a bit extreme, it serves a vital purpose. The

"burnout" warms up the tires to allow for the best possible traction.

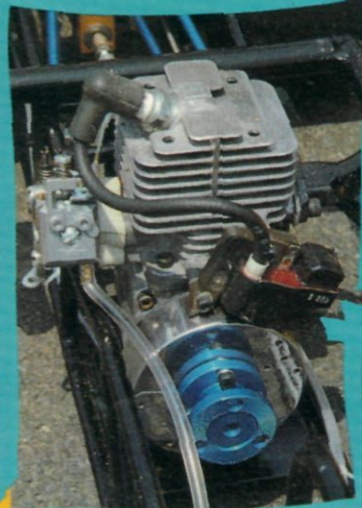
Now the time has come, the driver aims his land missile toward the finish line. The battle begins, a battle against two rivals—his competitor—and the clock.

With the green light, the top-fueler explodes off the line with breakneck speed and in a matter of just seconds, the finish line is crossed at more than 270 mph. This accomplishment gives a new definition to the phrase, "pushing it to the limit!"

In the R/C racing community, the latest trend seems to be toward the wild world of dragin'. With the newest 1/4-scale entry, the Vaporizer from Pacesetter Products*, you can reap the rewards of racing a full-scale fueller without the potential health hazard of being on board.

(Continued on page 99)

*Quadra Q50 equipped with
magneto spark ignition.*



*Prototype header and new gear-
driven rear end, complete with
attached reverse motor.*



*Vaporizer Dragster
skeleton shows the
sleek lines of this
machine.*



Home-Grown Project

SPRINT CAR



Scratch-build this lightweight 1/10 sprint car.

THERE ARE a lot of sprint car conversion kits out in the world designed to transform a 1/10-electric off-road car into an outlaw oval racer, but this article and plans describe a scratch-built, simple 1/10-racer that you can build from the ground up.

The chassis shown here is a further development of one originally published in *Model Airplane News* in



The Charger

by ROY MOODY

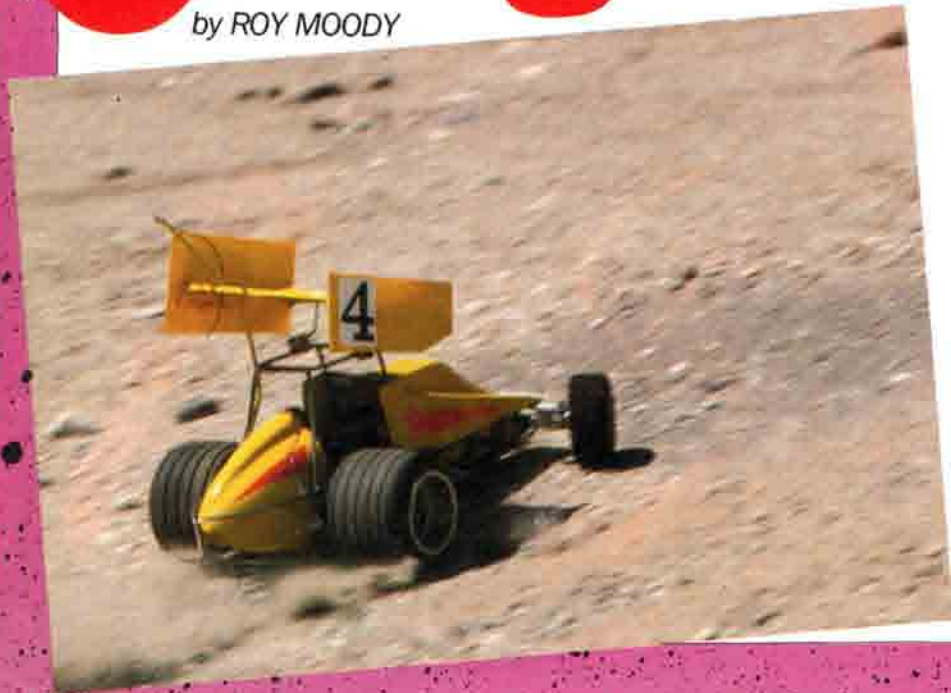
1981 as part of an article on a 1/12-scale Vega Modified.

Since that time, the availability of the basic motor pod has evaporated, and the model shown here requires metal-forming ability as well as wire-forming and machining to complete it.

The car shown has raced successfully on asphalt and carpet, and has had moderate success on dirt, when it has a smooth, tacky surface. The car is sprung only by the flexibility of the music-wire frame, and it needs a reasonably smooth running surface to operate competitively.

CONSTRUCTION requires the use of a small milling machine and a lathe for some of the small round parts. The drawings are reasonably complete, and the parts are not complex, so construction should be relatively easy.

Get a sheet-metal shop to form-up the U-shaped chassis channel and then drill the holes as shown in

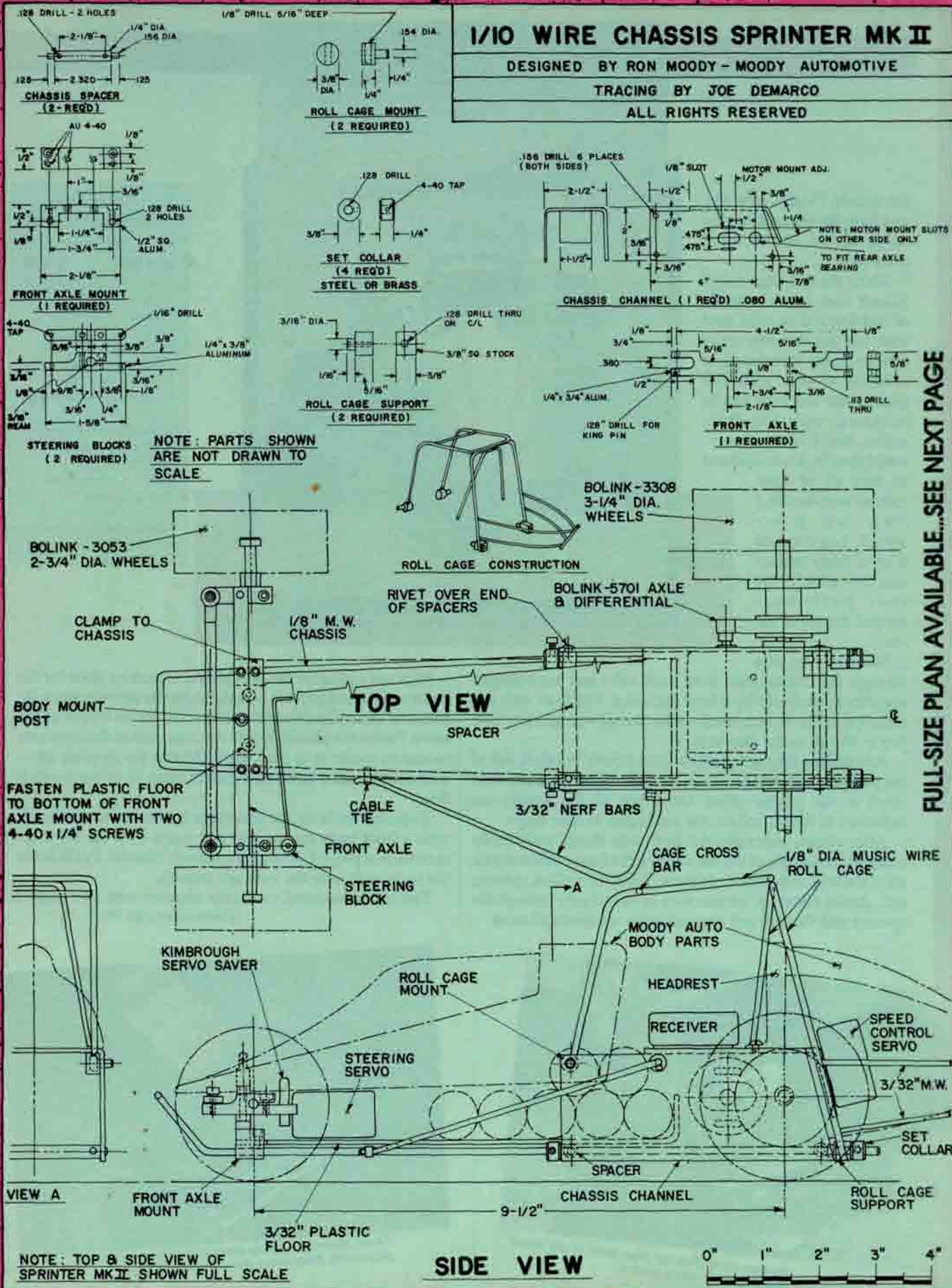


1/10 WIRE CHASSIS SPRINTER MK II

DESIGNED BY RON MOODY - MOODY AUTOMOTIVE

TRACING BY JOE DEMARCO

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FULL-SIZE PLAN AVAILABLE...SEE NEXT PAGE

the details. Finally, saw, file, and form the channel into the shape shown in the detail drawings.

Make the roll cage out of $\frac{1}{8}$ -inch wire. It can be made of welding rod or mild steel wire, but you can also make it from music wire though it is harder to work with. The joints in the roll cage can be soldered with Sta-Brite solder, but I really recommend they be silver-soldered so that all of your tedious wire-bending can be preserved. You can add a lot of body protection by adding the rear push bars around the tail of the car.

Side nerf bars pass through the chassis (one from each side) and are clamped together at each side by a large set collar. The front ends are attached to the $\frac{1}{8}$ -inch-music-wire chassis with plastic cable ties as shown in the drawings.

Assembling the car follows a "shis-kebab" method. All of the parts are slid onto the $\frac{1}{8}$ -inch-music-wire frame (no mild steel) in the proper order, and when all the screws are tightened in the set collars, the car begins to take shape.

After chassis assembly, the front axle should twist easily along the centerline of the car, causing the frame rails to rotate all of the way to the back of the car. All of the collars, spacers, etc., should allow the chassis wire to twist freely through the spacers and the rear roll cage support—no binds allowed.

Rear view of the Charger shows wing mounting hardware and rear chassis detail. Note tire stagger and custom-cut treads on Advance Eng. $\frac{1}{8}$ -scale slicks.



Order the Full-Size Plan CHARGER

#CA1087 \$10.00

Scratch-build your own $\frac{1}{8}$ -scale electric asphalt/carpet outlaw sprint car. This super lightweight sprung chassis is constructed of flexible music wire. Changeable wheelbase allows use with different style bodies.

To order your plan, send \$10.00 (price includes postage) to Radio Control Car Action Plans, 632 Danbury Rd., Wilton, CT 06897.

Now cut a piece of $\frac{3}{32}$ -inch plastic to make a floor for the battery space and provide a platform for the steering servo. Be sure and use a Kimbrough* servo saver on the output of the servo. Fasten the plastic floor to the underside of the front axle mount to secure it to the chassis. Mount the steering servo with double-sided tape and a plastic cable tie to the $\frac{3}{32}$ -inch floor.

To mount the body, the nose piece is attached to the chassis with a front body mount post and snaps over the roll cage mounts that project through the chassis channel. Put holes in the body to fit over the roll cage mounts.

The tail is mounted to chassis channel with two screws

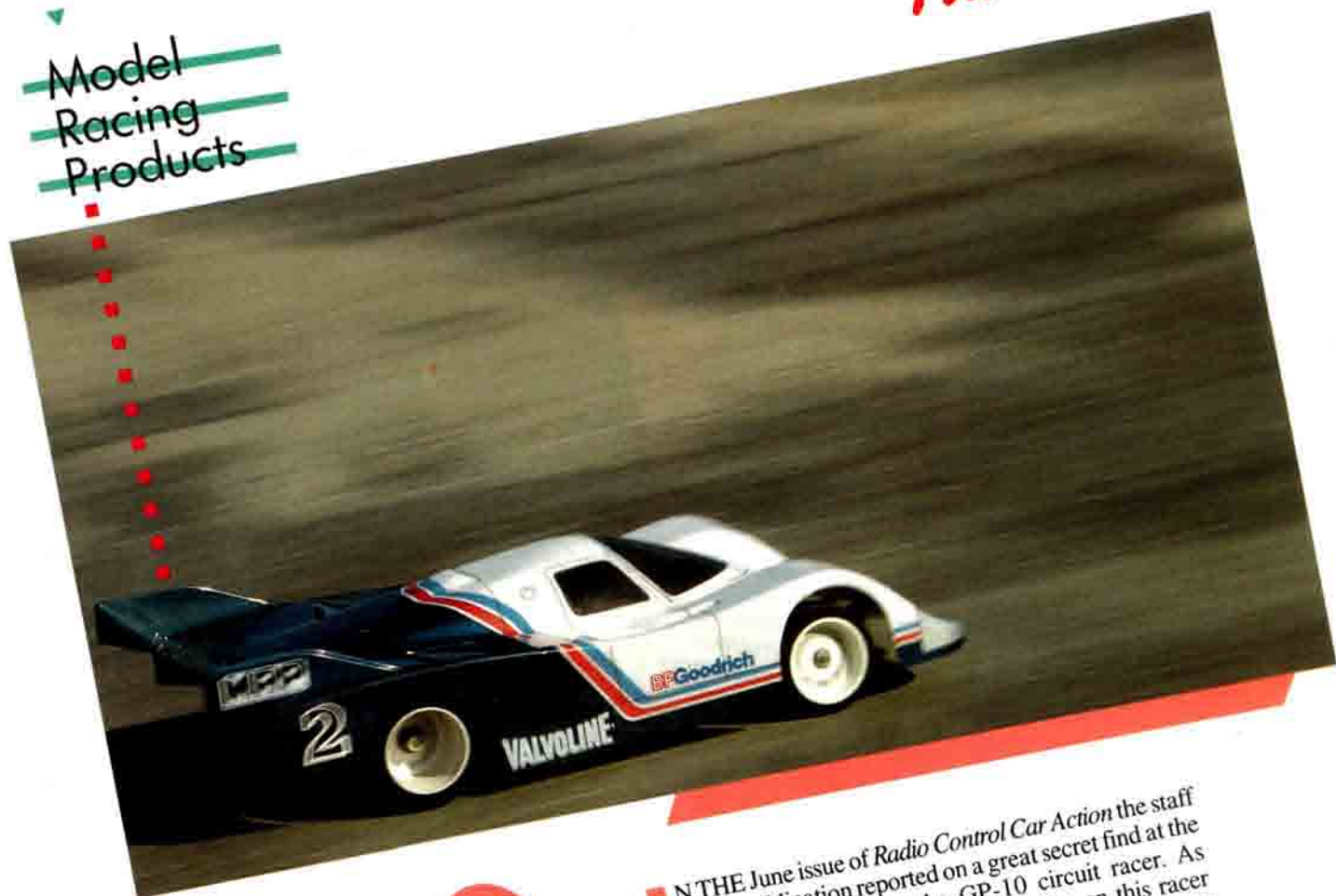
(Continued on page 103)



Bottom view, showing placement of the motor and electronic speed control.



Front, showing steering servo and battery pack placement. Note heavy-duty steering linkage.



GP-10

The new breed of
1/10 road warrior.

by
T.J.
Lyn

IN THE June issue of *Radio Control Car Action* the staff of this publication reported on a great secret find at the MRP* testing facility, the GP-10 circuit racer. As promised, MRP has completed production on this racer and we'll now get a chance to investigate the whole story behind this 1/10-scale machine.

With the growth of super-speedways and road courses for 1/10-scale R/C racing, the latest entry into this arena is the GP-10 from MRP. It is an unassembled full-ball-bearing kit that comes standard with the Lamborghini C-2 Lexan body. The GP-10 is not a toy but a high-performance race car for the serious competitor. The kit comes as a basic racing chassis and body but does not include motor, speed control, batteries, and radio. MRP offers this kit in other configurations, if you wish to have a motor or speed control as part of your kit.

THE KIT. As with any high-performance race car, simplicity is the key to reliable performance, and the GP-10 fits the mold. The chassis is constructed of aluminum (you might consider replacing it in time with a lighter composite material), which provides a light, strong base. The other chassis components (including the front A-arms and the rear suspension pod) are made of G-10 fiberglass. The rear axle and bearing supports are constructed from a nylon base material which is very strong, the same material that's used to give the front steering arms and spindles strength.

The front and rear suspension on the GP-10 is independent, and the dampening is provided by two

GP-10

aluminum oil-filled shocks. This suspension helps maintain the race car's 4 mm ground clearance. The kit also includes high-grade nuts and bolts for complete assembly. Your kit will also include a set of foam front and rear tires mounted on lightweight wheels. My kit came with tires badly out of round and balance; but after some discussion with the manufacturer, I found out that they were prototypes and the kit has since been updated with a set of nicely rounded and balanced tires on sharp-looking lightweight wheels.

The differential on the GP-10 is an 8-ball differential that was very smooth in operation. It is fully adjustable—which as we all know is a must to compensate for many different track conditions and types of motors that might be used in the GP-10. The choice of motor for this test car was the Team Losi* Revolution II (their two-wheel-drive modified motor), which provided a tremendous amount of power for any condition I could find.

The radio system and the speed control mount on an upper fiberglass plate which allows for easy movement of components, due to their size. The choice of radio system was the Circus Hobbies* Winner II series pistol grip as reviewed in the Summer 1986 issue of *Radio Control Car Action*. The speed control used was the Super Zeta from Product Design*. This combination of radio and speed control proved to be a great performance combination for both road course and super speedway driving.

The track-testing of the GP-10 was a sure-footed experience. The GP-10's low chassis design and the aerodynamic C-2 body gave this machine great handling ability with both low-speed turning and high-speed cornering. Stability at high speeds was very good but I do recommend the addition of a larger wing on the GP-10 if you decide to attack a super-speedway. This will help you gain better traction on this type of track, and I assure you, you'll need it. The top end of this car on the super-speedway is scary. You'll not be disappointed.

The GP-10 from MRP is not only a fine performer with the C-2 body design, but keep in mind that they also can put one of approximately 10 other bodies on this chassis, from a pavement-pounding 1987 Thunderbird to the Indy Lola T87. Performance and flexibility from one car—you can't ask for more than that.



The GP-10 circuit racer chassis is clean and sleek, designed for all-out performance.

*The following are the addresses of the companies mentioned in this article:

Model Racing Products Inc., 18676 142nd Ave. NE, Woodinville, WA 98072.
Team Losi: RPS Distributing, 1655 Cast Mission Blvd., Pomona, CA 91766.
Circus Hobbies, 3132 S. Highland Dr., Las Vegas, NV 89109.
Product Design Inc., 16922 NE 124th St., Redmond, WA 98052. ■

Inside Track

by MIKE LEE



Cox Bandito with Craft-Air sound and light system installed. Note bright headlights. Photo sensor automatically turns light on and off.

THIS MONTH I want to start out with a safety message to all drivers who run electric cars, about 85% of all radio-control car enthusiasts.

Batteries are sometimes victims of bad judgement, as when the owner doesn't want to spend the money to purchase the proper device to charge his 6-cell pack. Most of you know, I hope, that you use a charger designed to safely charge a 6- or 7-cell pack from either a 12-volt source or a 110-volt AC outlet.

A driver may attempt to charge his battery with a straight wire from his 12-volt car battery directly to the pack. The result: an exploded cell with the rest of the pack damaged beyond further use. Batteries can explode like bombs when mistreated. The cell casing may be able to contain the explosion and only allow the insides to push out of the top of the cell; if the casing won't contain the blast, ouch!

When you use electric products, you must treat them with respect. Use only safe and approved devices for charging and utilizing your electric racing products. On commercially bought chargers, look for the UL label as the symbol of a safe appliance. If you accidentally cut a

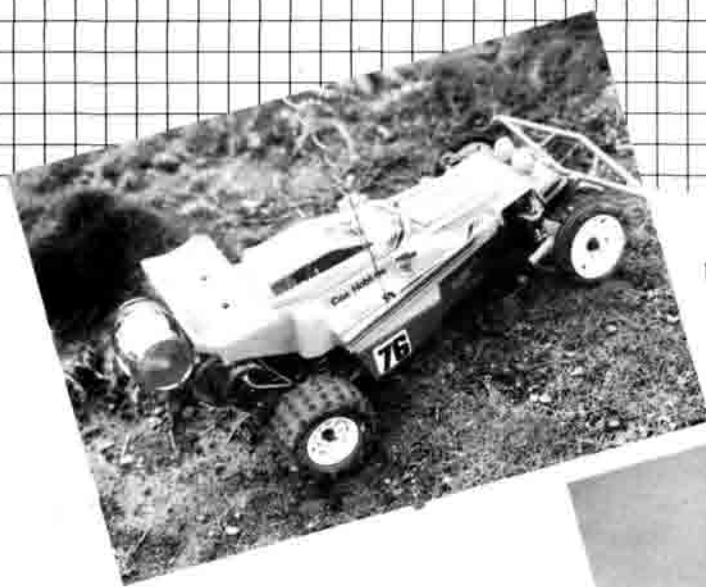
wire or cause the wiring to lose the insulation, don't use it until it is repaired and determined safe. If in doubt as to whether it is safe to use, let an experienced electrician check it out. Electricity plays no favorites and has no mercy to the ignorant. It can kill you. Don't be a statistic.

A new product this month is from the guys at Craft-Air* (not a name that has been associated with the car scene for very long). We received from Craft-Air the Sound and Lighting System for cars, and you've got to see and hear this thing to believe it.

The system starts with a sound system in the shape of a chromed beer-keg-style gas tank. This gas tank mounts in any traditional place on the car and is wired into the main power line to the battery. The chromed design looks pretty classy on most desert cars. In use, the Sound System produces a nice and audible *put-put-put-put-put* that mimicks the sound of a Volkswagen engine with a high-performance cam. The neat thing about it is that as your car moves out, the sound revs with the motor of your car. The faster you go, the more revs you hear! Awesome.

The other part of the system is the Lighting Set. Now this is a complete gas! The Lighting System is a self-contained system that features two bullet headlights that have very bright and focused beams. Yes, I said focused. That means that the lights look like real headlights on the road. And they're bright! They wire into the main battery just like the Sound System, and get this, they have their own light sensor! Yup, a light sensor that detects when it is dark enough outside to need the lights. This little bugger keeps the lights off when there's plenty of light to watch the car run, but when the sun goes down...it's night driving time!

Can you imagine it, a whole new era in racing is now really possible with the Craft-Air Lighting system. The whole lighting system with sensor weighs maybe an ounce. The light-sensing circuit with sensor will barely occupy a nickel and can be taped into position on the inside of the body. It will easily fit into any 1/12- or 1/10-scale race car, and it would be possible to fit them into scale positions on 1/12-scale closed-coupe cars, like the Porsche 962. Craft-Air also tells us that the lighting system will be available separately by the time you read this. For



Left: Bandito with Craft Air sound system mounted just behind the wing. Chrome keg-style sound module emits engine sound that varies with motor rpm. Below: Package is actually two systems—a sound system and lighting system with light sensor.



information and details, call Craft-Air and tell them the "Inside Track" gave you the inside story.

This month we're going to discuss a little bit on speed controllers, mainly the electronic types. If you have stayed with *Radio Control Car Action*, you may have seen our article on electronic speed controllers and the variety of controllers available right now. This market will be one of the fastest growing markets as technology makes the controllers not only more efficient, but far cheaper as well.

The big advantage of using the electronic speed controller is the fact that the response time from the transmitter to the wheels is almost instantaneous. These buggers make throttle response so incredibly quick that you may soon forget how to use that throttle with finesse. You actually end up blipping the trigger around the track rather than smoothly pulling on the throttle. That's all right, as long as that style fits the track. But, by the same token, this instant response time will tell you if you really need finesse in your driving style on the road. Road racing vehicles won't tolerate being blipped around the track, the result being a spin-out almost every time you try blipping it.

You'll change your style of driving drastically when you convert to the electronic box. The overall result will be a much better driver who can now master the art of rolling onto the throttle rather than hitting the Banzai switch.

Another benefit of the electronic speed controller is the fact that there are no

moving parts in the system. No more wipers that arc against the resistor plate. No more cleaning off the plate where carbon has built up to the point the contacts won't work. No more hot resistors to burn your fingers on. The electronic speed controller is a clean little box that might get warm, but does a heck of a job without requiring maintenance after the initial set-up.

The electronic types will save you lots of room. Most units draw their power directly from the main battery. From the controller, you normally end up with power to the motor and to the receiver. That means the elimination of the 4-cell radio receiver pack (if you still use it). Overall, it also means one less servo, resistor plate, mounting hardware, wiper, wiring, and other garbage. The electronic speed controllers, even the larger transistor-driven ones, will occupy less space than the original radio system with resistor speed plate.

There is a price to pay for all this convenience. Most electronic speed controllers cost from \$75 on up. That's a lot to cough up for us sports fans. But once you try one out and find out just what one can do for you, you'll find that it does justify itself in price versus convenience,

especially if you play the competition game. An electronic unit can cut precious seconds off of the lap times you do. Seconds add up to laps, and that is what wins the races.

As you can see, the electronic speed controllers are quite an investment. They are utterly fast to respond, they have no moving parts to fool with, they save lots of space and weight, and they make you faster on the track. If you find that an electronic speed controller is for you, then here are a few tips to remember.

1. Never install an electronic speed controller without completely understanding the instructions. These buggers can get real violent if you hook one up wrong and apply power to them.

2. If you have an electronic speed controller with a reverse speed, never shift from forward directly into reverse speed without first allowing the car to slow down for at least a second. This reversing action really destroys controllers and is the leading cause of failure. (The reverse is true as well.)

3. Never use a battery with more cells than the speed controller is rated for. If the controller says 7.2 volts, then stick to a 6-cell battery. This is another leading cause of controller failure.

4. Pay attention to the amperage

(Continued on page 138)

PRO-110   The Pro-110 comes standard with full ball bearings, adjustable ball differential, pressurized adjustable shocks, and caster and camber adjustments. COMES WITH FUTABA SP2GS, PROTECH 702, 7.2v. Pack ALL FOR \$240.99	WILDCAT   The Wildcat four-wheel drive off road racer has dual differentials linked by a metal single point steering, tunable coil-over oil filled shock absorbers, perfect weight distribution and 25mm ground clearance. COMES WITH FUTABA SP2GS, PROTECH 702, 7.2v. Pack ALL FOR \$202.99
THE CAT   The Cat is a 1/10 scale off road racer with 3 step forward and reverse speed control, RS540S motor, floating rear axle with dual oil dampers, rear differential improves cornering traction, oil filled adjustable dampers front and rear, trailing arm front suspension, and a gear ratio of 6.45:1. COMES WITH FUTABA SP2GS, PROTECH 702, 7.2v. Pack ALL FOR \$175.99 ASSEMBLED CAT W/ TRAXXAS RADIO, PROTECH 702 CHARGER, 7.2v BATT. ONLY \$128.50	THE RIPPER   The Ripper is a 1/10 scale electric powered four-wheel drive and four-wheel steering racing buggy that incorporates shaft drive and twin differentials, assuring maximum and efficient distribution of power to all wheels. COMES WITH FUTABA SP2GS, PROTECH 702, 7.2v. Pack ALL FOR \$144.99

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TRAXXAS CAT

(Continued from page 48)

supplied, factory-assembled, one for each wheel, and they're adjustable for stiffness.

The Cat has a wide, sturdy front bumper that bolts directly to the chassis. This should save possible front-end damage when the driver gets a little wild or when the car gets clipped in a race. In addition, there's lots of steering lock-to-lock, due to a servo horn designed specifically for this car. The tie-rods are sturdy and the ball connectors of high quality.

And wait until you see the axles and the front-end pivot shaft. I don't think anyone will bend them in anything approaching normal race use, yet the car weighs in (without 7.2-volt battery) at only 44.6 ounces.

I was pleased with the way the bevel gears are held inside the spur gear (see illustration). This can be a trouble spot on some cars but not on the Cat. The designers simply bolted the assembly together so there's no chance of the bevel gears coming out of the spur gear and jamming the rear end. Moreover, the differential cases are bolted together rather than screwed as the screws can strip out.

(Continued on page 66)

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AutoGraphics

TRAXXAS CAT

(Continued from page 64)

Finally, the well-designed chassis completely covers the receiver and speed controller and seals out the dirt and dust. Everything should last a lot longer.

Traxxas also shipped their new two-channel radio, No. 2001, which I used with the Cat.

Again there were some unusual features normal to more expensive units. According to Mike Jenkins at Traxxas, the transmitter output is a full 750 mW. I'm sure this accounts for the solid control at ranges beyond normal use. The trans-

mitter also is equipped with servo-reversing switches. In addition, it has a unique throttle-stick neutral lever that changes the position of neutral when used with a gas car.

The radio system features plug-in crystals for bands 1 to 6 in the 27 MHz band.

The receiver has a built-in battery eliminator circuit. Just connect it to a 7.2-volt pack and forget it.

PERFORMANCE. The photos were taken during track-testing of the Cat. The RS-540S motor, supplied with capacitors already soldered, performed like a champ right out of the box and the car handled the bumps and jumps of the track as well as any other entry-level car I've driven.

And like all entry-level cars I've driven, the Cat has problems in bumpy turns when it runs out of suspension travel. The rear end swings out, and if the driver is not careful, the car will spin out...quickly.

But on smoother turns I could get the Cat to understeer (the car ran wide) or oversteer (the rear end started to come around). Either condition is easily controlled with the throttle and steering. When you have a car that exhibits both oversteer and understeer, you can usually get it to handle well.

I believe a little time spent tuning the suspension and learning how the Cat likes to be driven will result in competitive lap times.

The car jumps well, but for racing I'd add more rear wing by attaching one of the many aftermarket wings to the posts that support the rather small stock wing of the Cat. On long, high-speed jumps a larger wing tends to keep the rear of the

(Continued on page 83) 13)

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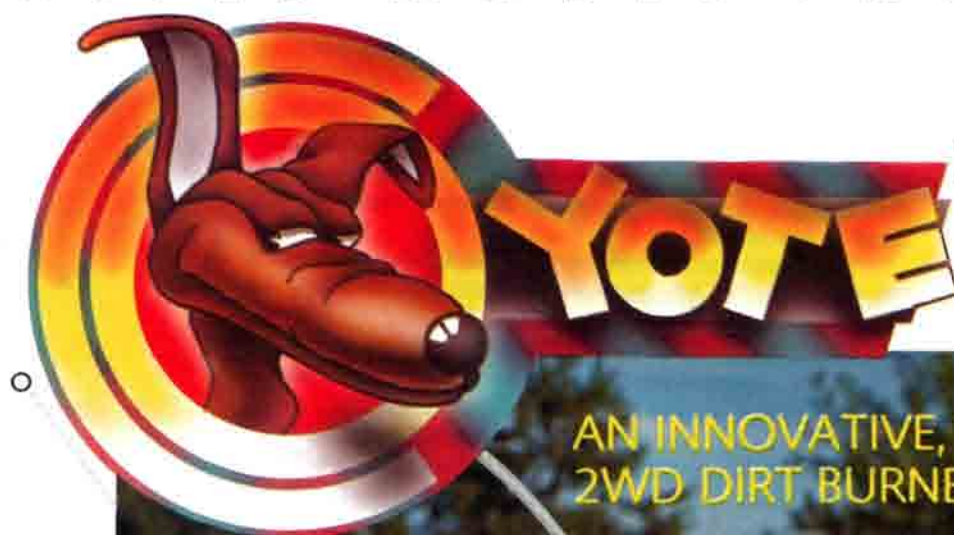
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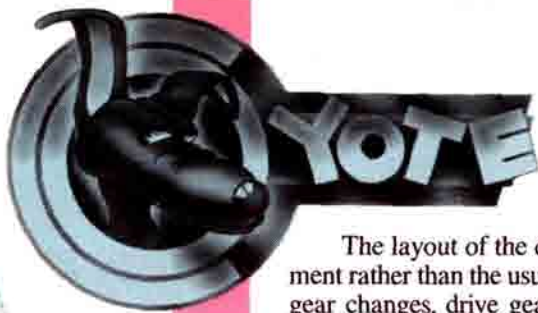


BACK IN THE June '87 issue, T.J. Lyn presented his evaluation of the four-wheel-drive version of the United Model Products* Coyote. Since this is a review/evaluation of the two-wheel-drive version, which differs from the four-wheel drive only in that one differential (front) assembly and the drive shaft are deleted, Lyn's comments, along with those that follow, should provide you with a comprehensive look at the kit.

THE KIT. The Coyote chassis consists of two stamped-aluminum side frames connected by injection-molded cross pieces. This forms the frame to which all the running gear is attached. The 6-volt battery pack is unique in that it is split into 3-cell "sticks," each of which is attached via molded clips to the aluminum side-frame member. This is a great way to distribute weight effectively and utilize normally wasted space but may present some problem for the racer who wants to run 7.2- or 8.4-volt packs.

After getting into actual assembly, the thought put into the design becomes apparent...everything is robust! No cutting corners here. The tie rods, for example, are massive by comparison to the assemblies on other vehicles I've built. This philosophy extends throughout the car.

BY
RICH
URAVITCH



The layout of the chassis utilizes the in-line motor placement rather than the usual sidewinder arrangement. This makes gear changes, drive gear alignment, and even motor changes easier to accomplish.

The suspension is double-wishbone with coil-over oil-filled adjustable shocks. Adjustable rods simplify chassis-tuning for course variations.

I used the optional ball bearings set everywhere on the chassis. I'm convinced that they make a tremendous difference in the performance of these racers.

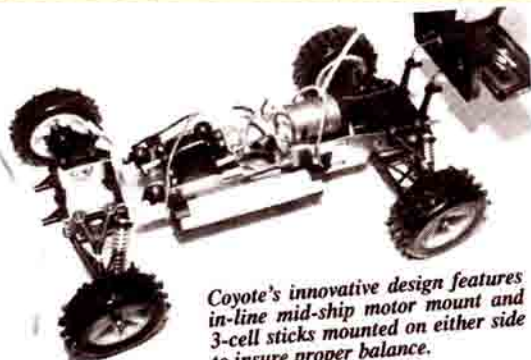
ASSEMBLY. Assembling the differential is a challenge, and probably the most frustrating step in the build-up process. After numerous, unsuccessful attempts at holding the four gears together, inserting them into the case and then trying to insert the pins and half shafts from two different directions, I decided to use a drop of Zap to hold the gears together while installing them as an assembly. It made all the difference in the world! After assembly, Zap Remover was used to clean things up, some lubrication applied, and the assembly worked like a charm!

The front- and rear-suspension A-arm installation took a bit of figuring out. I think I disassembled them at least four times each, trying to understand the geometry. I guess it's okay now—it seems to work well. When installing the suspension balls, which snap into molded receptacles on the A-frames, be sure they're

(Continued on page 105)



The Coyote in action at the test track.



Coyote's innovative design features in-line mid-ship motor mount and 3-cell sticks mounted on either side to insure proper balance.



Track Report

Kyosho

COSMO

Kyosho lights the boosters with suspension refinements of this design.

by RICH URAVITCH



THE COSMO is Kyosho's newest offering for the off-road two-wheel-drive electric car enthusiast and it's available through Great Planes Model Distributors*. In many areas, the Cosmo follows accepted drive-train design practices, such as four-wheel independent suspension and oil-filled spring-over shocks. It also uses the time-proven Mabuchi RS-540S motor in a sidewinder mounting arrangement, which drives a differential assembly that's housed in a hefty gearbox. The rear suspension employs a heavy-duty swing arm design, which forms the outer bearing/drive housing for the half shafts.

All of the suspension components are mechanically attached to a main "tub" section, housing all the required radio equipment and battery



packs. The rear (drive) tires are the widely used "knobby" variety, which provide serious bite when overtaking your opponent in that sweeping, loose-dirt right-hander! The front tires have straight-grooved tread, to help keep you heading in the commanded direction.

That summarizes most of the chassis pieces except the "special racing clutch," which minimizes wheel spin and further improves traction. One advantage of this little

device is its ability to prevent electrical damage to the RS-540 when you land after leaping obstacles. It's the most complicated piece to assemble on the Cosmo, and it's not that difficult, but the illustration can be confusing.

Like the suspension, the special racing clutch is adjustable to suit track conditions. Adjustment is done by either adding or deleting three O-rings, which increases or decreases clutch slippage based on your requirements. Our test Cosmo was set-up mid-range (two O-rings) and worked well on loose and relatively flat dirt surfaces.

A 20-page assembly manual/parts list speeds things up and, with the exception of the aforementioned clutch build-up process, provides clear and well-illustrated instructions. An extra bit of help in the



NIGHT RIDIN' WITH CRAFT-AIR

BACK IN MY DAYS of slot car racing, the most fun I ever had was in the all-night enduro races. I called home, got permission to stay at the track all night, and gave my light-equipped cars a pre-race check.

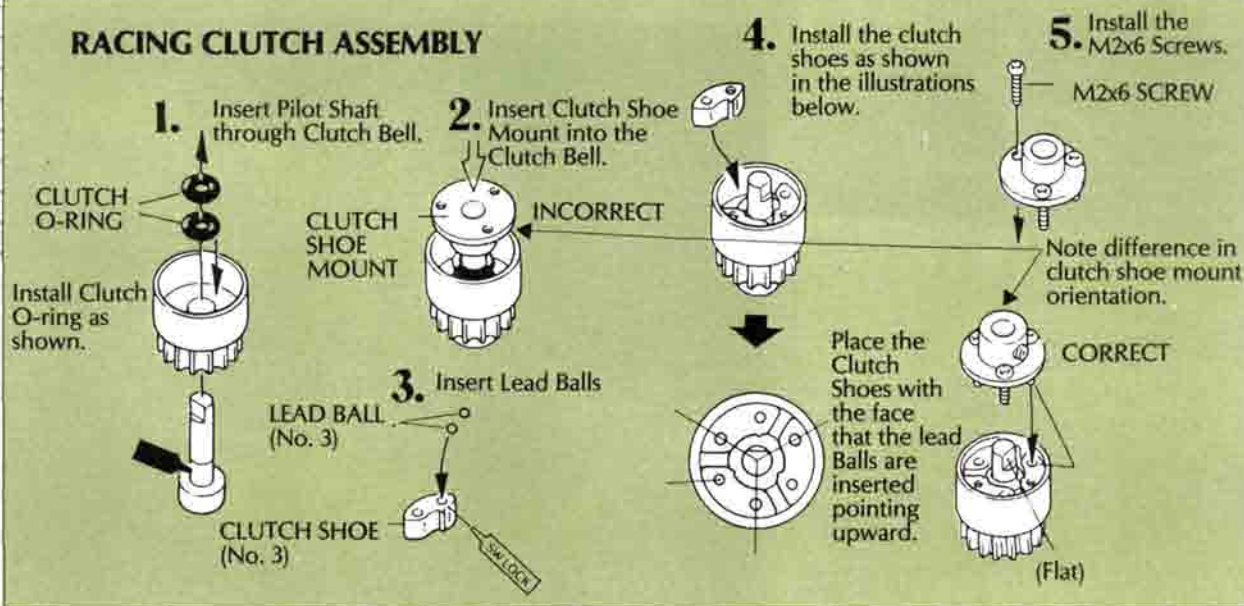
Today, thanks to Craft-Air*, we can enjoy all-night enduro excitement with our $\frac{1}{10}$ - and $\frac{1}{12}$ -scale racers.

The Craft-Air system has a genuine beam, red tail light, auto On/Off ambient light sensor, and uses just a miniscule amount of current. Get yourself a pit crew, a good battery rotation system, and the Craft-Air lighting system; another aspect of R/C racing fun will be had for both yourself and your club to enjoy.

**The following is the address of the company mentioned in this article: Craft-Air, 6860 Canby Ave. No. 120, Reseda, CA 91335.*



RACING CLUTCH ASSEMBLY



Note discrepancy of clutch shoe mount orientation and be sure yours is installed correctly.

manual is the suspension tuning instructions, over- and understeer adjustments, and various maintenance recommendations.

I chose not to use the BEC (battery eliminator circuit) in my Cosmo, since the Kyosho Pulsar Pro 2000 radio I used was borrowed from another car, and I didn't want to alter it. Besides, there's plenty of room for the four AA pencil batteries, and I don't think the extra weight hurt—it may have even helped traction by placing a bit more weight near the rear-end-drive wheels.

The Cosmo's body is molded in clear polycarbonate, and requires only trimming to a molded line and scuffing the inside prior to painting. Remember to mask the windows before you scuff! Nearly any type of paint will adhere to a scuffed polycarbonate body. I chose Testors paint for plastics, which worked fine. The acrylics that are designed for R/C car use have an advantage; they're water-based and don't smell up the house like lacquer or enamel.

Kyosho lists a number of options for the Cosmo which bear looking into—motors, tires, wheels, various-viscosity shock oils, motor covers, side guards, and ball bearing sets. I used ball bearing set No. H-002, which consisted of a dozen units correctly sized for the front wheels, gearbox, counter gear, and rear-suspension arms. Based upon past experience, this set is the single most important performance improvement item you can

add. Couple these with a killer motor and you're in!

My now "nearly stock" Cosmo was ready to go...or was it? It had bearings, a hot motor, a neat paint job—but was still semi-trick. This machine needed to be dressed up, know what I mean? It needed some lights, action...right?

The roof of the Cosmo now houses a set of Craft-Air* double-ended, high-illumination road lamps, white in front, red in back—these things look great! Want to really see what a hot wheel you are? Hang these on your car and try night racin'. It's a whole different experience.

The system hook-up is easy, and includes a light sensor which keeps the lights off in the daytime and turns 'em on in the dark. The barrel-shaped thing that's hung on the rear of the Cosmo is another Craft-Air goodie, a sound synthesizer. It uses an electronic sensor (pickup) attached to the motor, which feeds an amplifier. The sound plays through a miniature speaker that's housed in the barrel. Like the lighting system, the wiring is simple. You'll end up playing around to find the best location for the motor-mounted pickup, but, once complete, it sounds neat, very much like an engine idling that picks up intensity as you apply throttle.

Taking the Cosmo out to our test area, we created an imaginary course and developed some test procedures to check handling, spin resistance, suspension, and acceleration. The first thing we noticed

was that the racing clutch worked great! During straight-line acceleration, wheel spin was minimal, which meant the power wasn't wasted. However, the other thing we quickly noticed was that the steering was much too sensitive. We had set it up per the instructions by using the hole in the steering servo saver farthest away from the center. This provided the most throw, so we moved it to the hole closest to the center, reducing the throw by nearly half—enough for any road course, but much less sensitive for straight-line work. Doing a series of left-to-right turns at various speeds, we noticed the suspension needed a bit of stiffening, so we adjusted the shocks according to the instructions. It took about six runs to get things sorted out, but now the Cosmo responds exactly the way I like it, and is one of the "friendlier" cars in my garage.

At last count, Kyosho had a dozen electric off-road and flat-track cars available, the Cosmo being one of the most recent additions. I'd categorize this body as well-suited to the novice or intermediate racer. It's uncomplicated, easy to assemble, and very rugged, meaning you'll spend more time racing than maintaining, especially if you add the Craft-Air lighting system. Fast, dependable, and reliable...have you driven one lately?

**The following are the addresses of the companies mentioned in this article:*

Great Planes Model Dist., P.O. Box 4021, 21, Champaign, IL 61820.

Craft-Air, 6860 Canby Ave., Reseda, CA 91335.



1/10 Sprint Car CONVERSIONS

Get in on the oval track action with
by the RADIO CONTROL CAR ACTION STAFF

1/10-scale, is growing a
believe. Cars are becoming a
design that the full-scale boys can dream
wish they'd come up with. One of those
is the sprint car that has been
years. Now with the help of compa
Big Boy Toys*, and RBS Fa
sliding through the turns

All of our test kits used by
from the Associated*
suspension, battery boxes,
components were cho
things such as spee
All of the kits h
in mind, so don't thin
project. As we said
components, but
much
confi



e of these RC10 conversion kits.

RADIO-CONTROL car racing, especially the kind which nobody can even see in any conceivable way, even some that they are worth-pounding designs for the nation for many years. American Racing*, can enjoy the thrill of the big boys in an RC10 sprint car conversion. The same components: front suspension, rear differential. The optional the individual builders, shocks, radios, motors, etc. A seasoned R/C modeler this is a good entry-level kit. The same basic assembly in some areas is different than the stock RC10. For example, the front suspension in the

American and RBS kits is very simple to install, just transfer the suspension and you're done, with the exception of drilling two holes in the chassis pan for mounting the steering servo on the RBS kit. Big Boy Toys' kit, however, requires the mounting of the RC10 suspension in reverse—left on right, right on left—because of the flat chassis plate supplied. In order to do this you must trim the caster blocks and the trailing edges of the lower control arms to allow for tie rod and steering blocks. There might be a little extra work with this suspension, but the final scale look and performance of this setup are very nice.

As for rear suspension

RCCA lizards from left to right: Chris Chianelli, Fred Murphy, and Steve Pond ready to do battle.



Sprint car lineup from front: RBS/Fab, American Racing, Big Boy Toys.

Photos by Louis V. DeFrancesco Jr.



RBS/Fab equipped with Tekin speed controller and Trinity 7-cell.



SPECIFICATIONS **RBS FAB**

Base Kit: RC10
Chassis: Aluminum pan
Roll Bars: Anodized aluminum
Body: Lexan
Wings: Aluminum
Differential: RC10 (w/ Team Losi steel diff. tube)
Tires: Chevron (Advance Engineering)

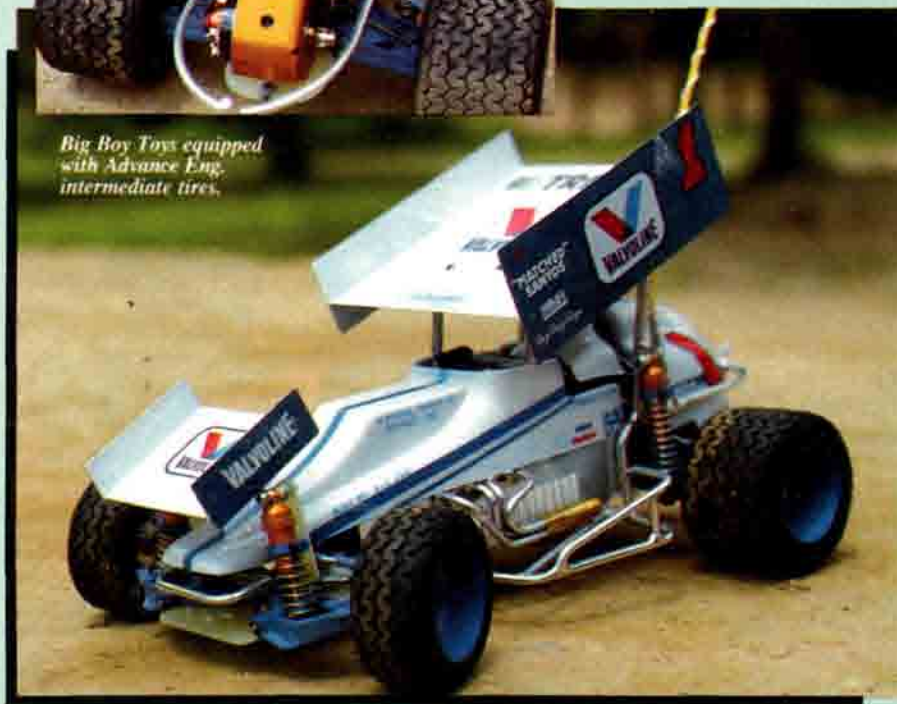
Wheels: Aluminum (Advance Engineering)
Battery: Trinity 7-cell
Motor: Reedy Modified
Radio: Futaba Magnum
Speed Control: Tekin ESC-1 Electronic
Servo: Futaba FP-135S
Test Weight: 69 ounces
Wheelbase: 10½ inches

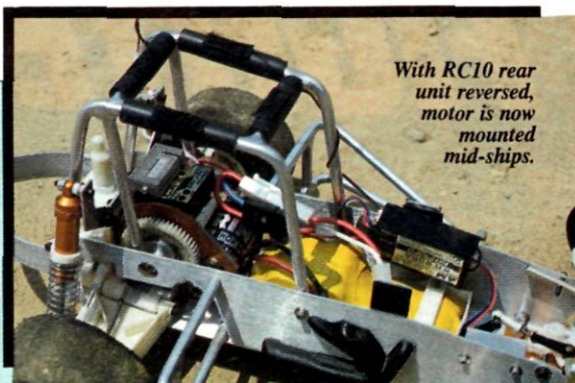


Big Boy Toys equipped with Advance Eng. intermediate tires.

SPECIFICATIONS

Big Boy Toys
Base Kit: RC10
Chassis: Fiberglass
Roll Bars: Polished aluminum
Body: Lexan
Wings: Aluminum (aftermarket)
Differential: RC10 (w/ Trinity 64 pitch gears)
Tires: Intermediate (Advance Engineering)
Wheels: Lightweight (Advance Engineering)
Battery: Trinity 7-cell
Motor: Trinity Modified
Radio: Futaba Magnum
Speed Control: Futaba MC-9 Electronic
Servo: Futaba FP-135S
Test Weight: 70 ounces
Wheelbase: 9¾ inches





With RC10 rear unit reversed, motor is now mounted mid-ships.

SPECIFICATIONS

American Racing

Base Kit: RC10

Chassis: Aluminum pan

Roll Bars: Aluminum

Body: ABS plastic

Wings: Lexan

Differential: RC10 (stock)

Tires: Foam

Wheels: Aluminum

Battery: Trinity 7-cell

Motor: Trinity Gold

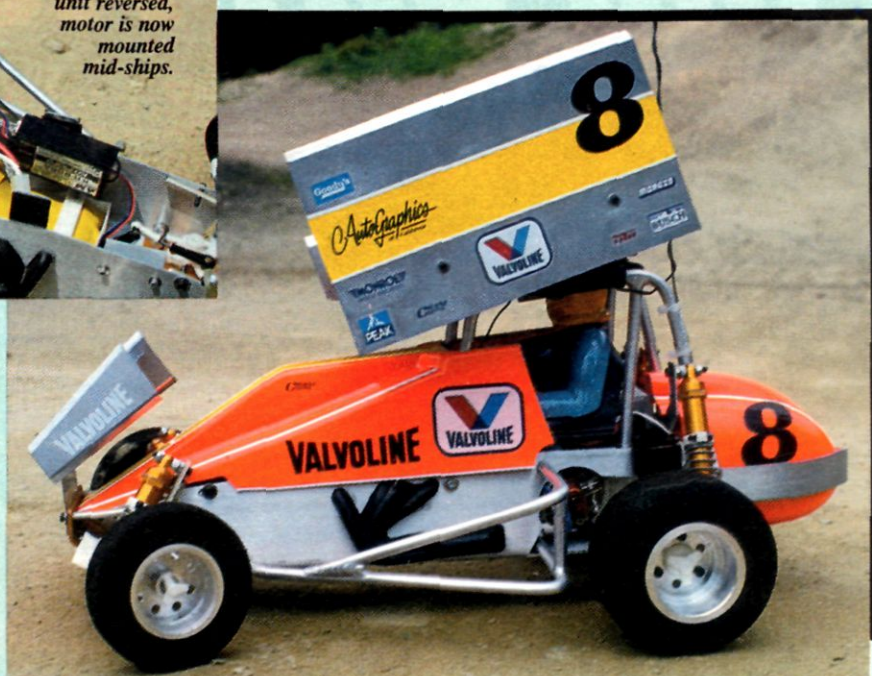
Radio: KO EX-5

Speed Control: KO CX II Rm-7
Electronic

Servo: KO PS 51S

Test Weight: 67 ounces

Wheelbase: 10 inches

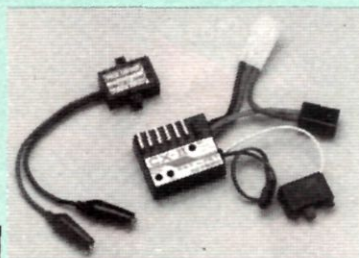


installation, the Big Boy Toys and the RBS kits involve simple transfers, with the American requiring modifications. Here the American kit recommends you reverse the rear suspension and gear case assembly. To do this you'll have to remove the top portion of the motor mounting plate, then install the upper differential shaft and motor plate onto the gear case from the opposite side shown in the RC10 manual. You might not have followed that, but we assure you the finished product works like a champ and

is a neat modification. The only other exception with the rear suspensions is that the Big Boy Toys recommends you install a set of Associated No. 6448 shocks, which are their long front shocks.

Overall, with the mentioned exceptions, all three kits have pre-drilled mount-

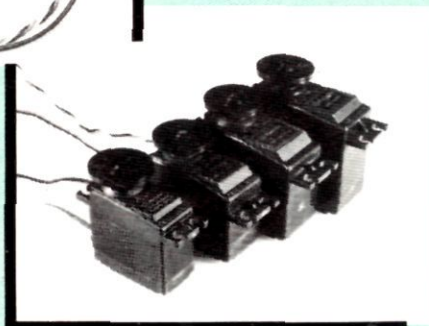
(Continued on page 85)



Futaba MC9 speed control and the KO CX-II (RM-7) were two of the performance choices. Both handled 8.4-volt battery packs and modified motors with ease.



The starting point for all our conversions, the RC10.



Futaba 135 at left and Futaba S28 in background. Note size difference.

Track Report

THE Triple Crown for Indy cars is made up of 500-mile races at Indianapolis Motor Speedway, Pocono International Raceway, and Michigan International Speedway. Those are the only times you'll see open-wheel machines, running side by



Kyosho

PLAZMA

MK. III

by RICH HEMSTREET

side at over 200 mph for 500 miles. I set up the latest Kyosho* Plazma Mk. III to run in a 1/12-scale triple crown. While it won't run 200 mph, I wouldn't bet against the Plazma in 1/12-scale competition.

THE KIT. Kyosho always does an excellent job of packaging their kits. The parts are separated into five bags, and the contents of each bag are illustrated and described on the last two pages of the 16-page instruction book.

The Plazma is a lightweight, two-wheel-drive, 1/12-scale racer. The independent front suspension consists of coil springs on each king pin. The front

Parma Lola T-700 was used on the Plazma.



1/12-scale Triple Crown Flyer!



Independent front suspension features coil springs.

axle offers variable castor angle adjustment. The rear suspension is provided by a monoshock that controls the flex of the motor and axle pod. The differential is a geared type unit. The only ball bearings in the kit are the pair that support the rear axle.

The car comes with a clear Can-Am-style KS-2 body. I used a Parma* Lola T-700 Indy car body. The kit also includes a LeMans 600E motor.

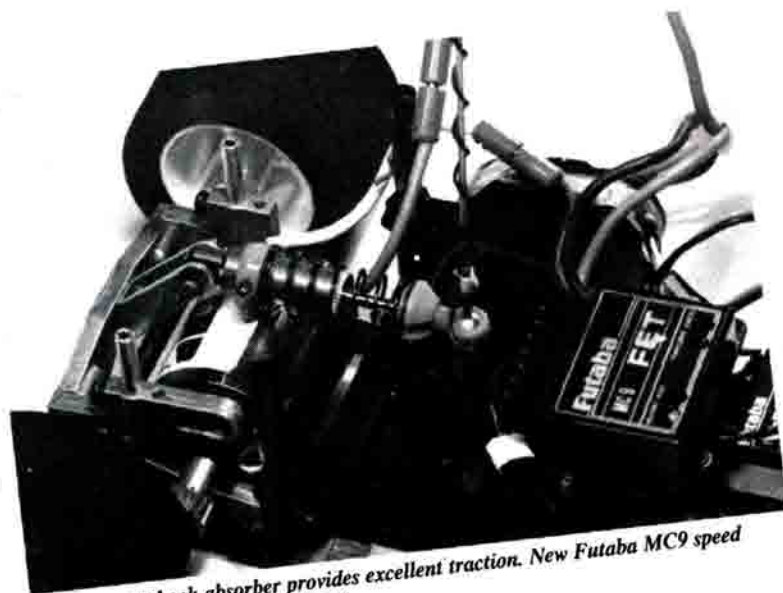
CONSTRUCTION. The instructions contain very detailed drawings of every step of construction. Be sure to

a wide variety of servos, it doesn't hold up well, and it doesn't always return to center. I installed a Kimbrough* servo saver instead of the stock unit.

The large shock on the rear of the car is easy to build and, once built, works very smoothly. When you paint the KS-2 body, be sure you recognize that the wing is molded into the rear panel. Cut this panel out before you paint the body; then paint the wing separately.

PERFORMANCE. The car is really quick off the line. Geared differentials don't tend to slip under heavy acceleration. And because of the rear monoshock, the rear tires really stick to the track.

By changing the castor angle of the front suspension, you can adjust how



Large rear shock absorber provides excellent traction. New Futaba MC9 speed controller was used in the Plasma.

use the screw-locking cement everywhere it is indicated. I suggest using petroleum jelly for lubricating the differential gears in step five.

The speed-control resistor is very lightweight and prewired, but I chose to install one of Futaba's new MC-9 Competition Electronic Speed Controllers. I used a Futaba FP-R2H micro-receiver and S-32H servo for steering. This radio system is very light and easy to install.

Before installing the motor, you should be sure to break it in, for peak performance. Run the motor for three to six hours on a 3-volt source. Be sure to occasionally apply a drop of light oil to each bushing.

One weakness I've found in Kyosho kits is the servo saver. While the servo saver can be used on



Dymond oval motor No. 1 is just the ticket for high speed.

quickly the Plasma turns. More angle slows down the steering while it increases straight-line stability. Less castor angle makes the steering quicker. This adjustment is really helpful in tuning the Plasma for racing at different tracks.

The Futaba MC-9 speed control gives excellent throttle response. This new unit should show up in a lot of race cars.

For running a high-speed oval, I pulled out the LeMans 600E and installed a super-potent Dymond* Red #1 oval motor. This motor has 16 winds and revs at 30,000 rpm. It's the way to fly

(Continued on page 104)

TRAXXAS CAT

(Continued from page 66)

car down and makes for a better landing. It also supplies down-force that increases traction; but be sure to keep the wing angle less than 45° or you'll end up with more drag than down-force.

As I said at the start, I really like this car. Compared with entry-level cars of just a year or so ago, the Cat wins hands down.

*The following is the address of the company mentioned in this article:

Traxxas Corp., 12150 Shiloh Rd. #120, Dallas, TX 75228. ■

SERVO SAVERS

(Continued from page 28)

sponsive, be sure to use ball links instead of Z-bend rods. See the June '87 *Radio Control Car Action* for Etto Pond's article on "Steering Linkage."

Remember, if you don't use a servo saver you'll probably destroy a servo every time you hit a wall, or car, or whatever else you run into. Always use a servo saver; it's cheap insurance for your steering servo.

*The following are the addresses of the manufacturers mentioned in this article:

MRC-Tamiya, 2500 Woodbridge Ave., Edison, NJ 08817.

Kimbrough Products, 1430 East St., Andrews Place Unit E, Santa Ana, CA 92705. ■

POLE POSITION

(Continued from page 35)

have joined together to form the South Eastern Racing Association (SERA). (Continued on page 89)

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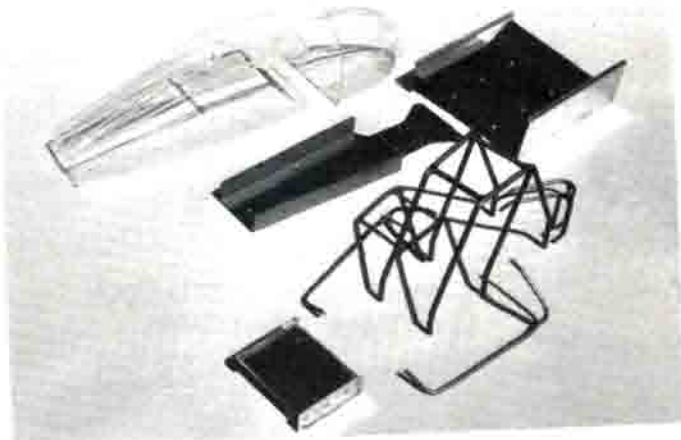
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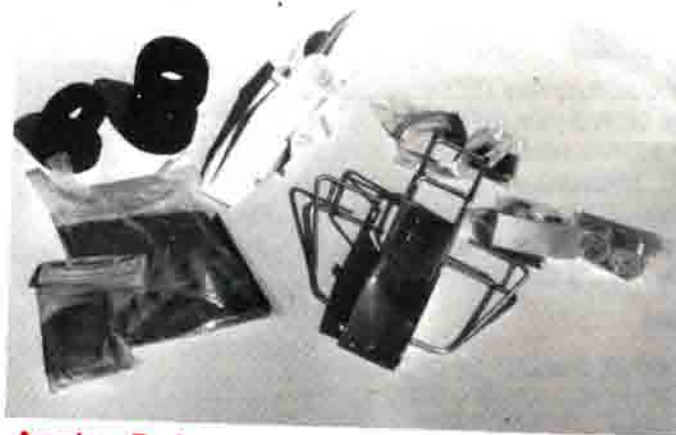


Kit Contents



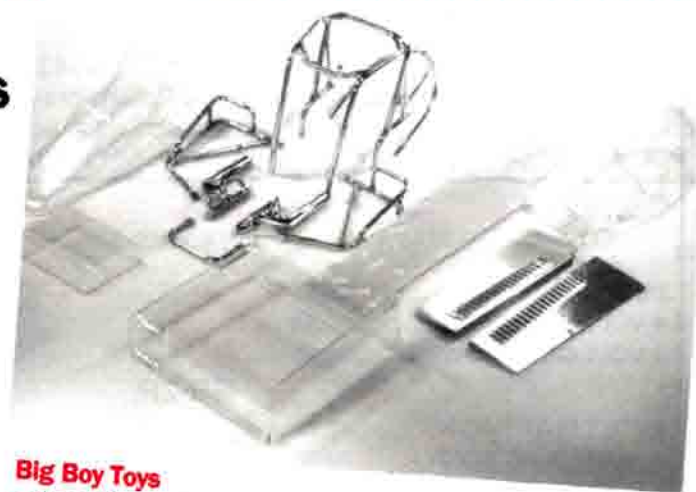
RBS/FAB

- Gold-anodized aluminum chassis pan • Gold-anodized tubular roll cage • Gold-anodized rear bumper • Gold-anodized nerf bars • Aluminum wing • Clear Lexan two-piece body • Mounting hardware • Optional: Nose wing.



American Racing

- Aluminum chassis pan • Aluminum roll cage • Aluminum rear bumper • Aluminum nerf bars • Lexan wing and nose wing • ABS two-piece body with headers and driver mounting hardware • Optional: Foam front and rear tires, aluminum one-piece wheels.



Big Boy Toys

- Fiberglass chassis plate • Polished aluminum roll cage • Polished aluminum rear bumper • Polished aluminum front bumper • Polished aluminum nerf bars • Polished aluminum headers • Aluminum side panels • Mount hardware • Optional: Clear Lexan two-piece body with wing and nose wing.

ing holes in their chassis for all other components to be installed. They are equipped with ample hardware for clean and easy mounting of the roll bars and body. But we must remind you that just like full-scale sprint cars, the chassis are much narrower than the conventional full-bodied car. That's why all the cars were equipped with mini-servos like the

Futaba* FP-135S and the KO PS51S. It's also very useful to use an electronic speed control due to the tight space configuration on this type of kit.

The powerplant choices on our test cars were at the top end of the spectrum, but even the horsepower-to-weight ratios of the full-scale sprint cars have always been out of wack—that's what makes

them so exciting. So 7-cell matched Sanyos and modified motors were the only way to go.

Our track test was on a high-bank red-clay oval. Wild is the word to describe the performance of these dirt-burning sprinters. Driving a sprint car is a whole new experience, they actually came out of the turns torquing the chassis on three wheels just like the full-scale. The fun and excitement of oversteering a powerful sprint car through the turns of a very fast, hard-surface track is a experience everyone must have. Off-road has made racing what it is, but this version of dirt kicking is another world. Many racers want their cars stuck to the track like glue, but sprint cars add a whole new challenge to driving. Sliding around a track at virtual full throttle, the entire lap in a controlled slide is hot. Now we know why they say they're driving on the edge.

Sprint car racing is alive, fast, and furious. It's another great way to keep R/C cars more exciting than ever.

**The following are the addresses of the companies mentioned in this article:*

Kimbrough Products, 1430 East St., Andrews Place Unit E, Santa Ana, CA 92705.

Moody Automotive, Inc., 755 Ash St., Flossmoor, IL 60542.

BoLink R/C Cars, Inc., 420 Hosea Rd., Lawrenceville, GA 30245.

R/C Race Prep, 20115 Nordhoff St., Chatsworth, CA 91311.

Big Boys Toys, 4408 Moscato Way, Bakersfield, CA 93306. ■

POLE POSITION

(Continued from page 83)

SERA rules have been formulated for $1/10$ - and $1/12$ -scales. The $1/12$ -scale rules are virtually identical to R.O.A.R. except for more liberal aerodynamic rules. The $1/10$ -scale on-road cars are divided into two main classes, Sportsman and Gear Box (GB). These classes are each divided into Stock and Modified categories. The Sportsman class cars are for $1/10$ -scale cars designed for on-road racing, like the BoLink* Invader and Roundtracker and the Composite Craft Predator. The GB class is designed to cover off-road cars that have been converted to on-road racing. The rules permit a great deal of modification to the suspension system, but the gear boxes cannot be altered in the GB Stock class. You can use a substitute gearbox in the GB Modified class, but it must still be a reduction-type unit. The GB Stock class runs \$25 motors with 6 cells at 45 ounces. The GB Modified class uses \$75 motors with up to 7 cells and weigh 45 ounces minimum.

I am told the MRC-Tamiya* Hornet is the car to beat in GB Modified, while the Associated* RC-10 is tops in the GB Stock class. It looks as if SERA has put

(Continued on page 99)

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10223 WELLS COYOTE



10227 '33 FORD 3 WINDOW COUPE



10228 BIG BEAR DATSUN



10229 VOLKSWAGEN BEETLE



10233 OSELLA PA9 CAN AM



10236 '86 NASCAR MONTE CARLO



10237 DESERT DOG FOR OPTIMA

POLE POSITION

(Continued from page 89)

together a package that will bring some of the off-road racers onto the pavement. I think more clubs should encourage the guys who are tired of cleaning dirt off their cars to try on-road racing by simply modifying their present car.

Rich Hemstreet, c/o Radio Control Car Action, 632 Danbury Rd., Wilton, CT 06897.

*The following are the addresses of the companies mentioned in this article:

BoLink R/C Cars, Inc., 420 Hosea Rd., Lawrenceville, GA 30245.

Composite Craft, 2400 Sand Lake Rd., Orlando, FL 32809.

MRC-Tamiya, Model Rectifier Corp., 2500 Woodbridge Ave., Edison, NJ 08817.

Associated Electrics, 3585 Cadillac Ave., Costa Mesa, CA 92626. ■

DRAGSTER

(Continued from page 53)

THE KIT. Because of its size, the Vaporizer came packaged in two separate corrugated boxes. One box contained the frame and nose piece of the body, while the other contained the tail, wing, engine, hardware, and optional Headman headers and parachute. The kit also included a tool set, and Loctite thread-locking compound to keep the nuts and bolts from vibrating loose.

To insure the chassis' endurance, Pace-setter has built the frame from aircraft-quality tubular steel. Other parts, such as the wing, wing supports, rear end housing, and steering linkage, are made of aluminum. The engine which comes with the Vaporizer is a Quadra 35cc. This engine is the piston-ported variety with magneto-spark ignition. Power is transmitted to the gear differential through a centrifugal clutch and a shaft with a dogbone-type coupling on the differential side. The differential is supported with four rods with heim joints at each end. Each rod is connected to the rear end (two above the axles, two below) and frame to prevent the rear end from twisting under acceleration and braking (this is similar to the four-link rear suspension found on many of the cars in the Pro Stock class).

The rear end is connected to the 9-inch dense-foam rear tires with solid steel axles and aluminum wheel adapters. Both the wheel adapter and axle are grooved, allowing the use of a key to prevent the wheels from slipping on the axle during acceleration. This version of the Vaporizer also includes an electric motor connected to the rear end with a gilmer-type

belt that makes it possible to back up the car after doing the burnout.

ASSEMBLY. Assembling the Vaporizer is a relatively simple procedure due to its size (those of you with large hands will know exactly what I'm talking about) compared with the 1/10-scale cars I'm accustomed to. Since there's no suspension on these cars (except small springs on the front end), there are considerably fewer steps involved. Assembly time was

just a little more than five hours. Most of that time was spent with the installation and alignment of the engine and rear end. The front end assembly is relatively simple, so is the rear wing and radio installation. The only other time-consuming operation is the adjustment of the throttle/brake, carburetor, steering, and parachute linkages. Once these steps are complete, it's time to do some dragin'!

(Continued on page 103)

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DRAGSTER

(Continued from page 99)

PERFORMANCE. The Vaporizer runs on a mixture of regular gasoline and two-stroke oil pre-mix (a can of Klotz oil is included in the kit). Due to the tank's size, I'd recommend mixing your fuel in a 1-gallon can to insure an accurate mix of fuel and oil. To transfer the fuel into the car, a manual or electric fuel pump can be obtained from a hobby shop which adapts to a 1-gallon can (these pumps are commonly used with model airplanes).

Once the car is fueled, fire it up with the optional starter, and prepare for the burner! Since the prototype we received came with foam tires, the smoke show wasn't as impressive as we'd hoped, but according to Pacesetter, Mickey Thompson is in the process of developing a rubber wrinkle-wall-type drag slick for these dragsters. With some rubber shoes, the Vaporizer should be able to smoke 'em up just like the big boys!

Also in the works for the Pacesetter machines is a tuned expansion chamber, which gives the Quadra powerplant a little more punch (due to performance restraints, the fate of the "zoomie-type" header shown on this car is still unsure). Even with the zoomie headers, the Vaporizer turned in a rather impressive run, to say the least. We're not equipped to give an estimated time or top speed, and I wouldn't want to hazard a guess at it, but I'd say that the Vaporizer is more than capable of turning in a scale quarter-mile. According to Pacesetter, during one of its test runs, the Vaporizer covered 330 feet (a 1/4-scale quarter-mile) in 4.9 seconds at over 100 mph. This was most likely done with the use of exotic fuels and other trick adjustments and components. I think it's safe to say that out of the box, the car would need quite a bit of work before it could reach these speeds.

**The following is the address of the company mentioned in this article:*

Pacesetter Products, 930 W. Hyde Park Blvd., Inglewood, CA 90302. ■

SCRATCH SPRINT

(Continued from page 56)

through the headrest. Cement the tail to the headrest with Shoo-Goo or a similar adhesive, after it is fitted to the fastened headrest. The body shown is from Moody Automotive* as are the headrest, wing kit, and aluminum rear wheels.

For the radio installation, place the receiver in the cockpit area as shown,

(Continued on page 104)



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RA 5851 The Fox	194.30	\$132.00
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RA 5855 Boomerang	192.70	\$131.00
RA 5456 The Falcon	140.55	\$96.00
RA 5857 BigWig	320.75	\$219.75
RC 5858 Blackfoot	125.00	\$86.00
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Falcon	11 Large, 1 Small	\$22.55
BigWig	9 Large, 5 Small	\$25.35
Blackfoot	8 Large, 2 Small	\$18.50

SCRATCH SPRINT

(Continued from page 103)

using double-sided tape. The speed control—I used a Delta solid-state unit—is similarly mounted to the rear of the chassis channel in the location shown in the drawings. Wiring to the motor and the batteries is routed under the chassis channel whenever possible.

Your best bet for tires and wheels is to use a BoLink* rear axle with a differential, adding your favorite gear selection at assembly. I used a 4:1 ratio in my car with a 14/56 or 13/52 set of gears. A Race Prep* stock motor and 7 cells gave all kinds of speed. The car easily runs over 4 minutes with this combination.

The front axle blocks are set up for 3/16-inch-diameter wheel axles, but this could be modified if you want to use another diameter axle system. Use BoLink front wheels.

There you have it—just enough info to get a scratch-builder going and building a real sprint car model in 1/10 scale. Note that the chassis construction shown here allows the wheelbase to be changed readily if you want to use this style in a car of another length.

*The following are the addresses of the companies mentioned in this article:

Kimrough Products, 1430 East St. Andrews Place Unit E, Santa Ana, CA 92705.

Moody Automotive Inc., 755 Ash St., Flossmoor, IL 60542.

BoLink R/C Cars, Inc., 420 Hosea Rd., Lawrenceville, GA 30245.

R/C Race Prep, 20115 Nordhoff St., Chatsworth, CA 91311.

KYOSHO PLAZMA

(Continued from page 81)

on an oval.

The car appears to be sturdy and should hold up well. The Plazma is a good car that only needs a set of ball bearings to bring out its full potential.

*The following are the addresses of the companies mentioned in this article:

Kyosho, dist. by Great Planes Model Distributors Co., Box 4021, Champaign, IL 61820.

Parma International Inc., 13927 C Progress Pkwy., North Royalton, OH 44133.

Futaba Corporation of America, 555 West Victoria St., Compton, CA 90220.

Kimrough Products, 1430 East St. Andrews Place Unit E, Santa Ana, CA 92705.

Dymond Motors, dist. by United Model Products, 301 Holbrook Drive, Wheeling, IL 60090.

UMP COYOTE

(Continued from page 68)

absolutely free to rotate and pivot; otherwise, precise suspension tuning will be impossible. I relocated the steering linkage/tie rods to points other than shown on the instructions. This eliminates potential tie rod/shock absorber interference which will result if the illustrated scheme is used. The rest of the chassis assembly goes along pretty smoothly. When you attach the front bumper assembly, you'll notice it hits the front tires, especially when steering. A hair dryer was used to heat, reshape, and obtain the proper clearance.

The radio I chose for the Coyote was the two-stick Futaba* Attack FP-2NBL, which is supplied with two servos and features BEC (Battery Eliminator Circuit), enabling the components to be powered from the 7.2-volt pack used to power the car. This is not only a space-saver but a weight-saver as well. I've been using Futaba equipment for many years now and consider it to be among the most reliable available. I don't find transitioning back and forth between the two-stick configuration and the equally common wheel/trigger radios to be a problem at all.

The body and rear wing are molded in clear polycarbonate, which has pretty much become the standard material for our racers these days. No instructions are given for the preparation or painting of

these parts, but back issues of *Radio Control Car Action*, especially Rich Hemstreet's guidelines in the Spring '86 issue, will fill you in on all the require-

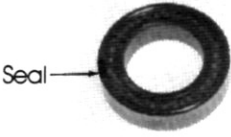
(Continued on page 106)

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McAllister
Racing

UMP COYOTE

(Continued from page 106)

from view by the dirt cloud, the Coyote emerged, still very much upright and still very much boogieing. During this testing I found that the voltage rheostat (speed controller) would cut out intermittantly, stopping the car. A quick screw-tension adjustment, cleaning, and a thin coat of a conductive lubricant seemed to cure the problem. I think the controller could stand improving, but it's a bit early to tell for sure.

The kit is extremely well thought out, the components are of high quality, and it's obviously intended for the serious racer/competitor. The assembly instructions, however, are presented in three languages, and are sketchy in some areas. The photos of the completed vehicle, both on the box and in the instruction book, won't help much either as they show a prototype version, significantly different from the production item.

The Coyote will probably take a bit longer to assemble and tune, but once

dialled-in should be a real competitor. You'll find it's an excellent handling, versatile vehicle which should remain at the head of the pack for some time to come.

Coyote's a-howlin'!

*The following are the addresses of the companies mentioned in this article:

United Model Products, 301 Holbrook Dr., Wheeling, IL 60090.

Futaba Corporation of America, 555 W. Victoria St., Compton, CA 90220. ■

SHOEBOX

(Continued from page 129)

remove a $\frac{3}{16}$ -inch-wide section from the outer edge of the wheel, which was added to the inside with the tire helping to hold it in place. This gave enough negative offset to neatly tuck the wide slicks up under the fenders for that "pro-street" look. When the tires are cemented to the rims, everything is held in line firmly. Note that a hacksaw or hobby saw could be used instead of a lathe to cut the plastic wheel, but the cut line should be accurately marked with a pencil or tape to assist you in even cutting. Sandpaper may be used to smooth off the cut edge for cosmetic purposes, and the rims may be painted as

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desired. On my Chevy, matching AJ's fronts were used, and all four wheels were painted chrome silver.

Some 1/16-inch aircraft plywood (hobby-shop grade) was used to form a set of mounts as shown. The pieces were traced onto the wood with my standard template and cut out with a sharp knife. You could use a bandsaw or jigsaw if you can't get the hang of cutting with the knife since some wood is much harder than the stuff I use. Spruce strips are added for stiffeners, if desired, and the completed pieces are bolted to the chassis to self-align them and are then epoxied together. Do not epoxy the mounts to the plastic chassis; the screws will allow you to remove them in one piece for conversion to off-road or another body style.

Once the completed mounts were ready, the body was checked for final fitting. Tire clearances, steering movements, and suspension were double-checked to make sure nothing would hang up on the body or mountings. Tamiya screw-in mounting pins were threaded into pre-drilled holes on the wooden mounts and matching holes drilled into the body. The body was prepped for painting and the windows were masked off. I decided to go all out,

and went scrounging through some old junk. I came up with a super-charger unit from a rather ancient Monogram big-scale engine kit. This was cut down slightly and stuck on the steering servo

with double-sided tape and the aged chrome plating touched up. A close-fitting hole was cut into the Lexan hood, allowing the blower and injectors to stick

(Continued on page 114)

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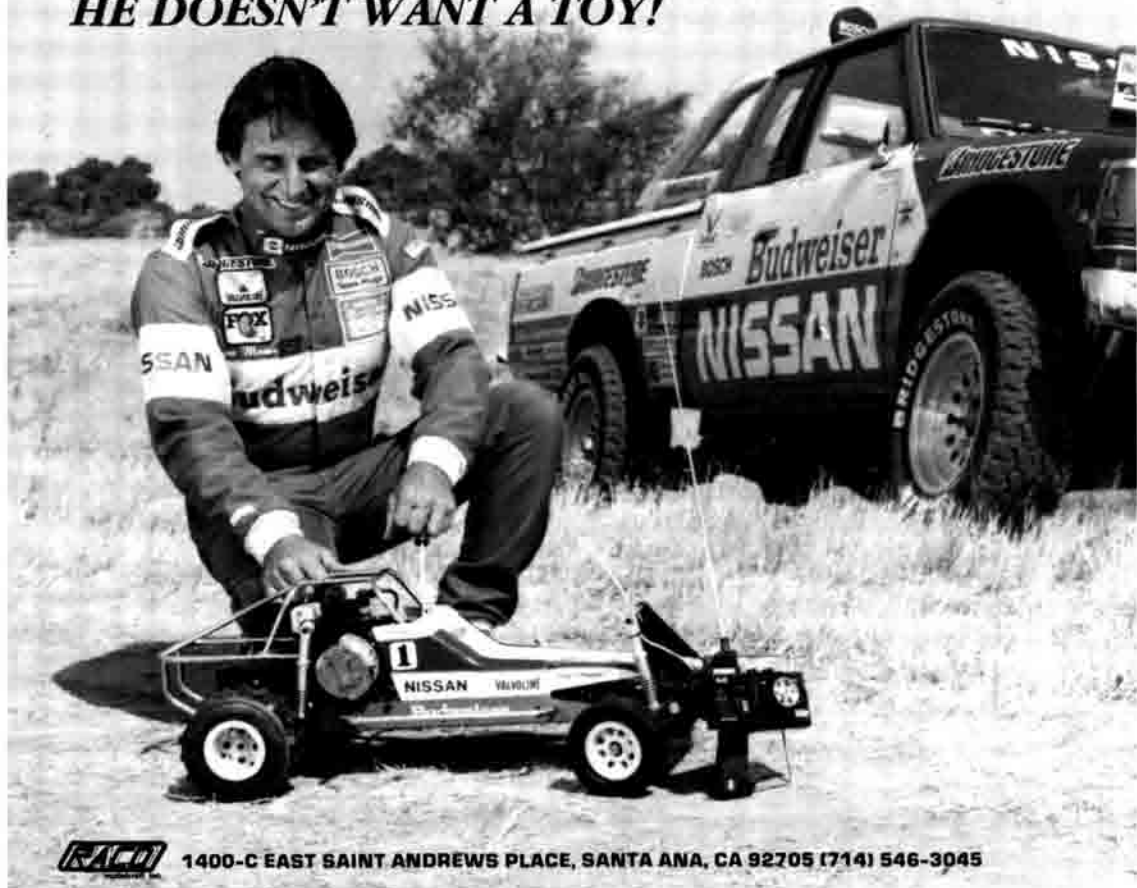
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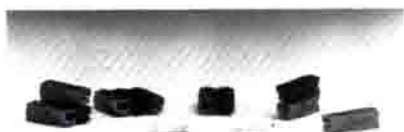
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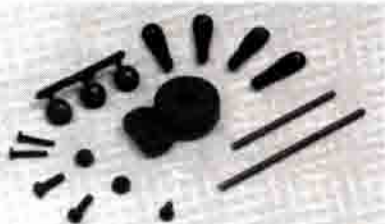
MIGHTY MIDGET

The Mighty Midget, available from Gilmer Hobby and Machine (1213 4th Ave., Howard Lake, MN 55349), is a 1/4-scale midget race car with many outstanding features like the aluminum frame, special torsional front axle, aircraft aluminum parts at all stress points, steel hiem joints, heavy-duty axles, spun aluminum wheels, precision gearbox, and molded-fiberglass body in your choice of four different colors. Available with Saito .90 opposed two-cylinder four-stroke or 1-cubic-inch single-cylinder two-stroke. For a six-page brochure send \$2 to Gilmer Hobby and Machine (1213 4th Ave., Howard Lake, MN 55349).



NFP CONNECTOR

The NFP Modular Connector can be used on motors and batteries or for just about any R/C car application that requires mating 1, 2, 3 or more wires. The connectors are modular, interchangeable, and self-mating with built-in dove tails. They have a 25-pound minimum contact-retention force, carry a 30-amp constant load, and use silver-plated contacts to make resistance virtually nonexistent. From NFP (P.O. Box 443B R.D. #1, Tamaqua, PA 18252).



CRP RACING

The Blackfoot/Monster Beetle steering kit contains a heavy-duty servo-saver along with heavy-duty 4-40 rod and hiem joints. Eliminates servo saver breakage. A must for serious drivers.

The CRP Pinion Gear Organizer, a small handy pinned tray that keeps your pinion gears within easy reach. Comes with prenumbered posts that allow for ease in selecting the correct pinion gear needed. Plates hold up to 14 gears. From CRP (3250 El Camino Real-B3, Atascadero, CA 93422).



MATRIX SPACECASE

The Spacecase 20001, which is constructed of a molded ABS plastic, is large enough to hold two fully assembled R/C cars, two transmitters, two molded drawers for parts or extra battery packs, and one molded tool drawer. Because of the way the Space Case is designed, it is also possible to modify the location of the sliding trays to accommodate larger cars such as sprint cars or trucks. From Matrix Enterprises (7015 Carroll Rd., San Diego, CA 92121).



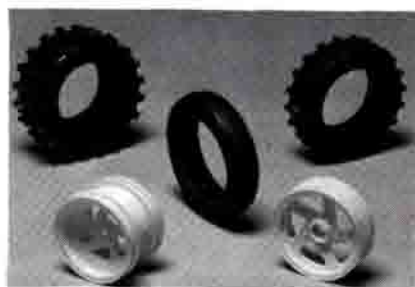
RACING MONTERO

The new 1/2-scale Kyosho Racing Montero is for the intermediate racer who is looking to step up to gas-powered cars. With its sealed gearbox, trailing-arm suspension, and four oil-filled shocks, the Racing Montero is built to take the abuse that off-roading can dish out. It uses a tub chassis to make assembly easy. Using a .09 to .12 engine and two-channel radio, the Racing Montero comes with a manifold and muffler. From Great Planes Model Distributors (P.O. Box 4021, Champaign, IL 61820).



MOTOR CADDY

Assembled with 1/2-inch plywood, all joints routed, glued and air-gun nailed, the Caddy is lightly sanded and ready to paint your own colors. The Caddy is 10 1/2 x 8 1/2 x 3 inches. The bottom has 1-inch styrofoam with eight recessed slots for eight motors. The top has 1-inch foam rubber to hold motors firmly in place when lid is closed. Closes with brass-plated piano hinge and snap catch. From R/C Accessories, Inc. (5673 S. McIntosh Rd., Sarasota, FL 33583).



NEW FROM PARMA

Parma's Front Wheels, No. 12106, and Rear Wheels, No. 12112, are molded in yellow plastic and fit both the Fox and Wild One. The tires that fit these wheels are Grooved Fronts, No. 12013, Front Oval Blocks, No. 12014, and Rear Oval Blocks, No. 12025. The Oval Block pattern tires also fit the Hotshot, Supershot, Boomerang and PB Mini-Mustang.

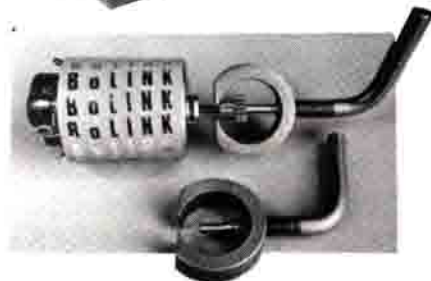
Parma's new .050 Allen Bit Hex Driver is a product that is needed by racers in all scales. The handle shape provides a firm grip for locking-in .050 setscrews. Also available are replacement bits packaged six to a bag (Nos. 7910, 7911).

New Oval Racing decal Sheet from Parma International (13927 Progress Pkwy., North Royalton, OH 44133) has all the proper manufacturers' decals to detail any oval racing car. Oval racing is one of the hottest things in R/C racing today and this decal sheet is sure to be popular! (No. 10602).



SPRINT CAR

Convert your Associate RC-10 into a 1/10-scale sprint car. The kit includes 6mm aluminum cage, two aluminum side nerf bars, aluminum rear nerf bar, two aluminum side panels, pair of headers, fiberglass chassis, and screws and nuts. For more info on this new product contact Radio Control Race Center (18240 S. Vermont Ave., Gardena, CA 90247).



FROM BOLINK

Revisit the '50s in style with BoLink's latest, the classic 1957 T-Bird, available in 1/10- and 1/12-scale, clear and painted.

The body destined to dominate CART/USAC Indy-type racing is the March. The same body is now available to 1/10-scale racers. BoLink's March 86-C is available clear or painted.

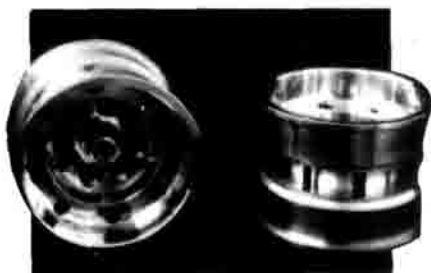
BoLink's Gear Puller is hardened-steel, removes stubborn motor pinions so you'll never bend another motor shaft again! A must tool for the serious R/Cer. From BoLink R/C Cars, Inc. (420 Hosea Rd., Lawrenceville, GA 30245).

Descriptions of new products appearing on these pages were derived from press releases supplied by the manufacturers and/or their advertising agencies. The information given here does not constitute endorsement by Radio Control Car Action, nor guarantee of performance or safety by Radio Control Car Action. When writing to the manufacturer about any product described here, be sure to mention that you read about it in Radio Control Car Action.



QUICK CHARGER

The KS-1200 DC Quick Charger from Circus Hobbies (3132 S. Highland Dr., Las Vegas, NV 89109) is perfect for R/C car enthusiasts who desire the flexibility of a variable-amperage charger. The KS-1200 has an adjustable 0- to 3.6-amp charge current output with a built-in meter display, along with an adjustable 5- to 30-minute timer that shows charging status through an LED display and beep when charge is complete. Standard Tamiya-type Ni-Cd battery plugs, and a tough, lightweight metal case.



ALUMINUM WHEELS

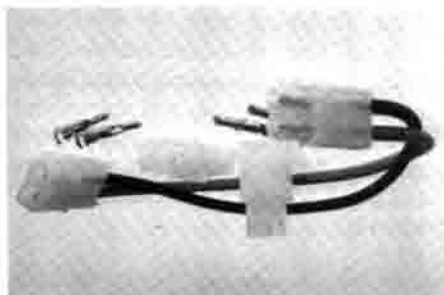
TecnaCraft introduces new modular aluminum wheels. True two- and three-piece modular construction designed specifically to fit your car. Precision-machined and -polished from aerospace-quality aluminum alloy. These wheels don't require special adapters or hubs; they accept stock tires without glue. Available now to fit RC-10, Yokomo, and Optima. For new models and other quality TecnaCraft products contact TecnaCraft (1335 B Dayton St., Salinas, CA 93910).

What's New



TAMIYA POWER

The MRC Tamiya RX-540VZ Technigold Motor and Gold Power 8.4-volt Ni-Cd battery pack is an adjustable-timing modified motor that features precision ball bearings, diamond-trued commutator, factory-wired pigtails, balanced rotor, and C-form brush springs. To supply power for the Technigold, MRC/Tamiya also offers the Gold Power 8.4-volt 1200 mAh Ni-Cd battery pack with seven high-quality Ni-Cd cells connected in series with spot-welded tabs and silicone-covered wire to reduce resistance. Battery pack also includes a built-in circuit breaker to protect it against a short. For more info contact Model Rectifier Corp. (2500 Woodbridge Ave., P.O. Box 267, Edison NJ 08817).



AEROTREND PRODUCTS

Aerotrend now has Stainless Steel Bearing kits available for all major R/C cars as well as a long list of individual bearings for special applications, including new Teflon-sealed RC10 Rear Support Bearing.

The Gold Plug set consists of a Tamiya-type male and female plug and gold connectors. Each connector is stripped, copper-plated, nickel-plated, and finally finished in gold. The Veriflex wire used with this set is a high-temp, flexible, multi-strand wire. This combination of Gold Plug set with Veriflex wire is a superior high-performing product. From Aerotrend Products (31 Nichols St., Ansonia, CT 06401).



PARAGON PRODUCTS

Paragon Ground Effects is an extremely effective tire-traction compound comprised of the six different ingredients, each performing a specific purpose in the tire adhesion process. Tested and now being used by several top-notch U.S. drivers. Use it on carpet or asphalt.

Paragon Centerline Racing Wheels are 1/12-scale racing rims molded in a tough, lightweight plastic. These rims not only give the serious competitor a weight advantage, but they're also excellent for concourse competition. Available in white, chrome, and gold-tone finish. For more info contact Paragon Racing Products (Dept CA2 8802 Knollwood Dr., Eden Prairie, MN 55344).



MODELER'S GUIDE

Badger Air Brush Company (9128 W. Belmont, Franklin Park, IL 60131) announces a "Step-by-Step Modeler's Guide to Air-Brushing," with 32 pages and 180 color photographs showing the techniques and details the pros use. Subjects include military modeling, figures, diorama and scale modeling of a '69 Camaro with tips on how to modify, detail and airbrush—to give scale models more realism—plus instructions on use of different paints and the proper use of military colors.



AMTEC SPORTS RADAR

The Amtech Sports Radar Model 8500 is a hand-held radar gun (also can be mounted on a tripod) featuring solid-state electronics, 7-segment LED read-out, heavy-duty 6-foot coil cord with fused heavy-duty standard lighter plug, and 1-amp sealed gel-cell battery with vinyl case. The model 8500 is capable of operating from 0° to 150° F and will read speeds ranging from 10 to 250 mph with an operating range of 400-plus yards, depending on the size and speed of the subject. For more info contact American Micro Technologies (312 E. 55th St., P.O. Box 696, Hinsdale, IL 60522-0696).



ACTION MAGS

Design Ingenuity (P.O. Box 531, Tenafly, NJ 07670) introduces Action-Mags, offering a complete line of aluminum alloy wheels and adapters to fit most of today's popular R/C vehicles. Wheels are available for standard tires or racing slicks and fit popular vehicles such as Blackfoot and Big Bear. A machined-aluminum finish is standard with an available high-polish option.



HOT TRICK

Hot Trick Racing Cars' (1157 Cushman Ave., San Diego, CA 92110) latest catalog features high-quality, high-performance replacement parts for the serious racer. The parts available range from shock pistons, heavy-duty axles, and steering kits to completely new chassis and even a sprint car conversion.



CHARGE-MASTER

A Ni-Cd charger that's 10 years ahead of its time. Fully and safely charges 4-, 6-, or 7-cell Sub C Ni-Cd packs in 5 to 8 minutes—guaranteed. Adjustable peak voltage control with manual override. For more information write Charge-Master, P.O. Box 294, Covington, OH 45318.



R/C CAR STAND

R/C car repair and display case. Raised platform keeps tires off the work surface. Divided trays for sorting parts and tools. For more information contact SRT, 25944 W. Route 134, Ingleside, IL 60041.

PLASTI-ZAP/CA++

Designed for assembly of plastic model kits or plastic scratch-building projects, its chemistry will screen out any mold release agents present on parts, and bond all types and formulations of plastics used by various plastic kit manufacturers. Plasti-Zap/CA++ can be used with Zip Kicker for extra-fast building. For more on these and other new products contact Pacer Tech (1600 Dell Ave., Campbell, CA 95008).

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SHOEBOX

(Continued from page 109)

through in classic fashion without showing that the rest of the engine wasn't there. The body was painted with the new Pactra* Daytona Yellow; a bright neon hue certain to attract attention. I thinned the paint a little for use in my airbrush and it took almost two bottles to cover this big body.

I've recently found a better way to simulate bumpers and chrome trim. MonoKote by Top Flite* is great stuff. Their trim sheets come in lots of colors besides chrome, but the stuff won't handle compound curves. Your local auto parts store is likely to have rolls of adhesive-backed metal foil which can be worked with an appropriate burnishing tool, slowly stretching it into crevices and over bumps and curves. As an example, a piece is cut somewhat larger than a headlight or taillight and the backing peeled away. The foil is carefully placed over the area to be covered and smoothed out with a fingertip. A round-tipped wooden or plastic burnishing tool, such as the cap from a pen or a rounded-off dowel, is used to rub gently against the

(Continued on page 121)



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SHOEBOX

(Continued from page 114)

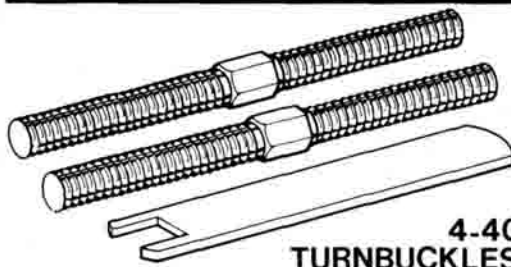
foil, starting from the center and working toward the edges. The metal will stretch over high spots and form around corners and into seam lines. After the desired effect is achieved, the excess is carefully trimmed away with a sharp knife. Bumpers, window trim, lights, door handles, and body side moldings are typical areas where this technique may be used. It can even be polished for a higher shine if desired. If you goof up, you just peel it off and try it again: practice makes perfect. After a couple of days, this stuff is on to stay, and it's a heck of a lot better looking than chrome paint. Real window tint material was used to hide the unrealistic effect of being able to see the chassis through the windows.

The finished car looked pretty slick, but I wanted something that would run as hot as it looked. As mentioned before, the chassis was built stock, so as to have a baseline from which to gauge the improvements with. The easiest way to measure performance is to time the acceleration through a measured distance; in this case, a scale quarter-mile. Several runs were made with a peaked-out 6-cell pack on

(Continued on page 138)

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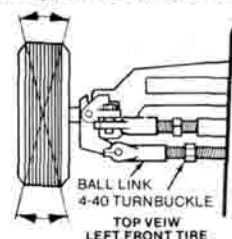


**4-40
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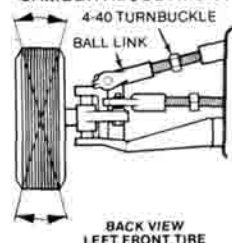
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| 6. 109 RU | Red Ultima Tri Dir Comp™ Feather-Weight Chassis Pan. \$23.95 |
| 7. 110 RU | Red Ultima Rear Shock Tower and Wing Mount. \$13.95 |
| 8. 111 RU | Red Ultima Front Shock Tower. \$13.95 |
| 9. 112 RU | Red Ultima Front End Bracket. \$12.95 |
| 10. 113 RU | Red Ultima Front "A" Arms. \$21.95 |
| 11. 114 RU | Red Ultima Rear "A" Arms. \$21.95 |
| 12. 115 RU | Red Ultima Feather-Weight Upper Plate. \$13.95 |
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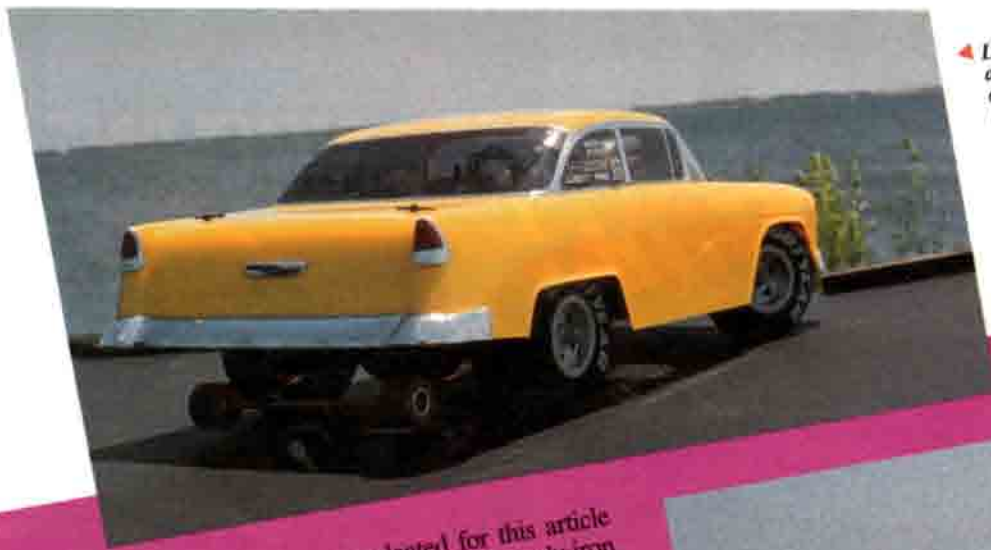
The "Screamin' Shoobox"

Street racing makes a comeback
with this easy-build '55.

by
Eric
Goldschrafe

THE OFFICIAL muscle car era began about a quarter of a century ago, back when I was doing my high school homework to the tunes of *Li'l Deuce Coupe* and *She's Real Fine, My Four-Oh-Nine*. By the time I got out of the Navy, I spoke a language few people could understand today. Back then, a "six-pack" might be found under the hood of a car, a "goat" wasn't a barnyard animal, and "ET" didn't refer to a little alien. If it was built right, your car's price tag wasn't over seven grand, but your tach was. After some all-too-brief affairs with a Street Hemi, a 427 Chevelle, and a Duster 340, the counters for the price of gas on the pumps started running faster than the gallons, insurance premiums began to cost more than car payments, and air-pollution regulations made high-performance a memory. These memories must still be strong in a lot of folks because the current crop of aftermarket Lexan seems to be leaning quite a bit in the direction of a new phenomenon—the R/C "Street Machine."

Whether it's because this type of car is more identifiable as an R/C model or because you just don't want to cruise around the neighborhood in a race car, the detail potential and leeway for creative modifications look as if a whole new area in the hobby is going to take off. After doing several hot-rod bodies for my kids, I decided to do one from the ground up as a respectable boulevard cruiser. Most of my previous creations used the tough and adaptable MRC/Tamiya* Grasshopper/Hornet car kit as a base. This popular and relatively inexpensive off-road chassis may be easily modified into a neat street machine without permanent changes to its off-road capability. I haven't found any bodies that won't fit a universal set of mounts that will work for every body shell that I've been able to test-fit.

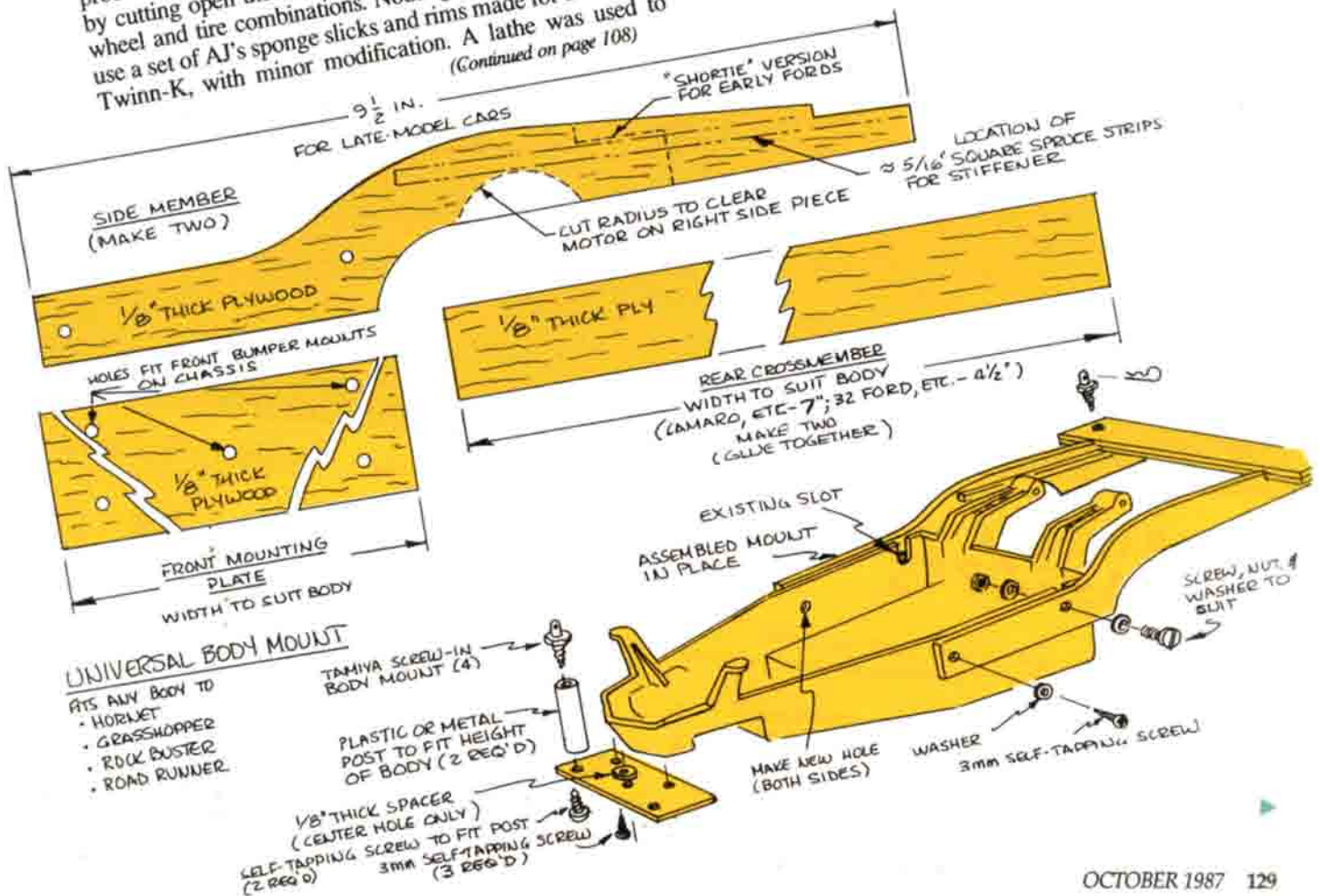


◀ Left: Realistic stance is attained by getting body down over tires and maintaining "stock" appearance. Below: Bright paint, lots of chrome, speed decals in windows, and blower protruding from hood lend classic look of authentic street machine.

The BoLink® '55 Chevy was selected for this article because it typifies the classic late-model hot-rod. Early iron such as the '32 or '40 Ford coupes or newer cars such as the '67 GTO or '69 Camaro will work just as well and are currently available. Some of the pre-war Ford bodies will require some front-end alterations, but that's another story for another issue.

My Hornet chassis was built completely stock except for the Parma® front shocks. I prefer the You-G shocks because the rod doesn't pop out the top like some other units when you hit a bump, but the hood on the '55 is so high that they don't hit. Newer cars, such as the Camaro, will need the You-G shocks or you'll have to poke a couple of holes in the hood for clearance. The Chevy body was trimmed out and set over the chassis; it was apparent that tire clearance would be a problem in the rear. I didn't want to spoil the stock appearance by cutting open the fenders, so I began test-fitting different wheel and tire combinations. Nothing worked. I decided to use a set of AJ's sponge slicks and rims made for this car by Twinn-K, with minor modification. A lathe was used to

(Continued on page 108)



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SOUTHEAST ALABAMA R/C AUTO RACERS
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Woody Trimble (205) 793-1849

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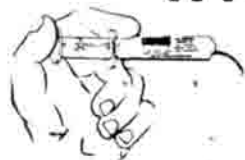
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SHOEBOX

(Continued from page 121)

board, netting quarter-mile times in the 7.40-second range. The receiver battery pack was moved from the midship area into the trunk (an old super-stock trick) to help weight transfer and cut down wheel-spin, and times dropped to 7.20. A careful front-end alignment putting toe-in, camber, and caster at zero degrees knocked off another tenth of a second. A 7-cell pack was slipped in and the car really woke up, with elapsed times dropping almost a full second to 6.20. That one extra cell is pretty inexpensive horsepower when you consider how much it cost to lower the ET a little more.

Now, you have to start being careful, torque-steer off the line is a possibility, and you can't over-correct or you'll get out of shape. The top end of the quarter is another bad spot—the car is now some 130 feet or more away, going like a rocket, and you've got to stop it gently. Any braking action will cause you to get crossed up, and those big slicks will make the car flip.

What's really fun is having the kid up the block try his pure stock Grasshopper in a match race—and you blow his doors off.

Naturally, he's gonna find out about 7-cell packs, so I squeezed in an 8-cell unit just to see what would happen. Just getting on the throttle provoked giant bumper-dragging wheelies, even from a roll. A couple of sets of wheelie bars were tried out, and the final design utilized some brass tubing with a spring-wire core

mounting a set of 1/32-scale slot car wheels and tires. Back at the dragstrip, the yellow beast was carrying the front wheels for 30 or 40 feet, and ETs were in the 5.70 range.

Is there still room for improvement? You could try lightening the chassis a bit, but be careful not to sacrifice strength—it's still a street car, and maybe an off-road car. Perhaps a body without so much drag (they don't call '55 Chevys "shoeboxes" for nothing) will lower ETs a little. The answer isn't more cells—the added weight makes for some pretty wild rides at full speed. Hot motors are one way. There are plenty to choose from, but speed costs money. It's going to be interesting to see what turns up in the future in the way of hot street machines, but we'll all have our little speed secrets by then. By the way, if you're out cruisin' with your rod and you spot the yellow '55 and you want to try it, your car had better be able to run five-flat, or you'll eat my dust!

**The following are the addresses of the manufacturers mentioned in this article:*

MRC/Tamiya, Model Rectifier Corp., 2500 Woodbridge Ave., Edison, NJ 08817.

BoLink R/C Cars, Inc., 420 Hosea Rd., Lawrenceville, GA 30245.

Parma International, Inc., 13927 Progress Pkwy., Royalton, OH 44133.

Pactra, 410 N. Michigan Ave., Rm. 1280, Chicago, IL 60611.

Top Flite Models, 2635 S. Wabash Ave., Chicago, IL 60616.

INSIDE TRACK

(Continued from page 62)

rating of the controller. For off-road use, the minimum surge-ampere rating should be 40 amps. The minimum for road racing can be as low as 10 amps surge. Exceeding the ampere rating could severely damage the controller. When in doubt, get the highest ampere rating you can afford.

5. No matter what the controller features, always turn on the transmitter first and the receiver second. Turning on the receiver without the transmitter could send your car to the track without you.

Of course, these are some pretty simple and common sense rules to remember. Use them and when using that speed controller, have a ball!

Our last note for this edition comes as a welcome note to all of us consumers. With the major advances being made in car technology, we are finding that the cost of our hobby is actually going down! The electronic speed controllers we just talked about are a great example. Two years ago, you could not touch a "magic box" for less than \$100. It wasn't uncommon to find that some kid paid more for the controller than for the whole car. But today, we find that working electronic speed controllers are available for around \$40.

Mike Lee, c/o Radio Control Car Action, 632 Danbury Rd., Wilton, CT 06897.

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